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NEW YORK  
ZOOLOGICAL SOCIETY



1895—1943

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FORTY-EIGHTH ANNUAL REPORT  
FOR THE YEAR 1943





NEW YORK ZOOLOGICAL SOCIETY  
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THE CITY OF NEW YORK

## MEMBERSHIP IN THE NEW YORK ZOOLOGICAL SOCIETY

THE New York Zoological Society was founded in 1895 for the "instruction and recreation of the people" through the establishment of a Zoological Park, for the promotion of zoology through exhibition of collections, publication, research and exploration, and for the conservation of animal life of the world. Since 1899 the Zoological Society has directed the New York Zoological Park and in 1902 it was entrusted with the management of the New York Aquarium.

Membership is actively invited of all persons who are interested in the objects of the Society and desire to contribute toward its support.

Annual Membership is \$10. This entitles the holder to a Member's card and 10 guest tickets of admission to the Zoological Park on pay days; a copy of the Annual Report; a subscription to *ANIMAL KINGDOM*, the bi-monthly publication of the Society; privileges of the Library and Members' Lounge in the Administration Building and to attend all open meetings of the Society.

Annual Members may become Life Members by the payment of \$200. Other classes of membership are: Patron, \$1,000; Associate Founder, \$2,500; Founder, \$5,000; Founder in Perpetuity, \$10,000; Benefactor, \$25,000.

Applications for membership may be submitted to any officer of the Society or to the Society's general office at 630 Fifth avenue, New York 20, N. Y.

### FORM OF BEQUEST

I do hereby give and bequeath to the "New York Zoological Society," of the City of New York.....

.....

## REPORT OF THE PRESIDENT

**B**EARING in mind that this institution was designed for peacetime service, it is invigorating to be able to report that the past year, the second successive one under war conditions, has been an active and satisfactory period as well as one strong in promise for the future.

The general policy of the Society during the war has been to maintain all of its activities, in so far as possible, along their accustomed lines. The last two years have amply substantiated this policy. The staff of the Zoological Park and the Aquarium have made a considerable number of specific contributions to Army, Navy and war-medical problems. Among these contributions are the use of Dr. Beebe's bathysphere by the Navy for testing depth charges, basic experiments for electrical detection devices, collaboration in methods of manufacturing drinkable water from seawater, analyses of shellfish suspected of being poisonous, studies of parasitized fish used as human food, investigation of shark repellants, and an elaborate series of experiments with electric eels looking to the improvement of electric batteries. Further, the Zoological Park has frequently resembled a gigantic U.S.O. annex, so numerous were the men and women in uniform. Tens of thousands of servicemen, many of them from Canada, Australia and New Zealand, have been among the visitors. Attendants have reported that never before have they been asked so many questions about wild animals of distant parts of the world. One exhibit called "Life In The Jungle," and showing concretely how to find food, water and directions in the jungle, was created by Dr. Beebe and the staff of the Department of Tropical Research. It drew the unprecedented number of 232,000 visitors. Many servicemen copied down instructions from the exhibits for future use in some personal emergency.

### Zoological Park

All buildings, exhibits and facilities, except tractor-train transport for the public within the Park itself, have been kept in full operation. In

addition, it has been possible to complete several improvements, including particularly the re-arrangement of the interior of the Primate House and the Small Mammal House. Administrative problems, due in the main to the loss of experienced personnel to war service, have been numerous. Our staff and general organization deserve great credit for the successful way in which the Zoological Park and the Aquarium exhibits have been operated in the face of difficult conditions.

Despite the fact that for the greater part of the year automobile traffic was at an all-time low, 2,102,616 persons visited the Zoological Park and all the special shows and exhibits attracted large crowds. There were 144,533 visitors at the Farm-in-the-Zoo which stressed wartime production of beef, pork and poultry, 170,024 persons visited the Children's Zoo, and 27,987 visitors saw the exhibit of "tame" wild otters conducted by Mr. Emil Liers.

Although the war has virtually stopped the importation of wild animals from abroad, the collections as a whole, while somewhat diminished, continue to make a very good appearance. Increased efforts to gain better breeding results from our collections have met with considerable success.

### **Educational Activities**

Our educational program naturally divides itself into two parts: that directed to the visitors at the Zoological Park and Aquarium, on the one hand, and that to the outside public, through literature, moving pictures or radio, on the other.

In connection with the first of these, namely, educational methods applied to the visitor, we have been much encouraged by the popularity of recently-installed exhibits in which through descriptive texts of more than usual length, a summarized story of the life habits or life cycles of animals is presented. Typical of this technique are two exhibits in the temporary Aquarium hall showing the life habits of the lungfish and the life cycle of the common freshwater eel. We have concluded that this type of exhibit can be used more generally throughout the Zoological Park. We are also making provisions for the use of such techniques in the planning of the new Aquarium. Generally speaking, as a result of several years of effort, the descriptive labels throughout the Park have been brought up to a first-rate standard.

In line with the policy of making the Zoo a center of information regarding animal life, there have been installed several loudspeakers, over which short talks are given. Also, the first of a series of pamphlets, repre-

senting a simplified and popular course in zoology, were prepared and distributed in considerable volume at nominal prices. We believe that through these pamphlets we have hit upon an excellent method of popular education and consequently intend to step up this program during the coming year.

In regard to educational activities to the outside public, the members of our organization, together with members of other institutions, have collaborated in the preparation of a book on the natural history of the Pacific. This book, entitled "The Pacific World," neared its completion at the year's end. Arrangements have been concluded for its distribution in large numbers to the armed services in the Pacific area as well as for a trade edition for the general public. This first and general book is to be followed by a series of books on the animal life, natural history, and peoples of the Pacific area. The contact of our Society with this whole project has provided an opportunity for which we are extremely grateful. There is good reason to believe that these publications will prove an important contribution toward popular education in zoology and related subjects.

One of the most encouraging occurrences has been the continued great success of the film on bird migration, prepared by our organization a year or more ago. Rights to an abridged version of this film were purchased during the year by Columbia Pictures and the film has been widely shown in the theatres of the United States, as well as through educational channels. It had previously been shown in the theatres throughout Canada and is now finding a steady distribution in the Central and South American republics. We hope to make many more such films in the future. There has been a miscellany of newsreel subjects and several radio appearances by members of the staff.

### **Scientific Work**

In addition to research work having to do directly with the war effort, the scientific staff has accomplished much research and systematic work, the results of which are referred to in a number of places in the detailed reports which follow. As will be noted, the amount of original work is very considerable in its volume. It has been arranged that Dr. Myron Gordon shall become a member of the Aquarium staff with the title of Assistant Curator. His experimental work in genetics in fishes, particularly in the field of melanomas, has become cumulatively more important.

During the year considerable study has been made on the plans for the proposed Research Center, designed for the study of animal diseases in

connection with human disease problems, as well as for general biological research. It is hoped that funds for this important project will be made available in order to assure its establishment after the war.

### **Conservation**

New projects in conservation are obviously difficult to undertake at this time. The Conservation Committee has, however, voted funds in support of several well-established conservation programs. As a matter of fact, the series of books on the natural history of the Pacific, referred to above, was initiated largely to encourage conservation. It was believed that if members of our armed services in this vast area were provided with a point of view regarding the desirability of preserving wild life on the islands on which they were stationed, much random killing "just for target practice" would be avoided.

At the year's end a most promising arrangement was entered into with the Conservation Commission of the State of New York whereby detailed plans for a Conservation Exhibit, to be sponsored jointly by the State Conservation Commission and the Zoological Society, should at once be prepared as part of the Post-war Development Program of the Zoological Park.

### **Finances**

From a financial point of view the year has proved a satisfactory one. The Society ended the year with its expenses within its earned income. Legacies aggregated somewhat in excess of \$55,000, in addition to which cash donations for the year totalled \$36,750, Mr. Childs Frick, Mr. Archer D. Huntington, Mr. Dulaney Logan and Lieut. Laurance S. Rockefeller being the principal donors. It is not in any way possible adequately to express how valuable financial support of this kind is. Our potentialities for growth in the various fields of work of the Society are far greater than our present means can admit, and it is only through support of such generous nature that this institution will be able through the years to attain its objectives in the fields of public recreation, education, research and conservation. Detailed reports of all donations are shown on page 38. The appreciation of the Society is most warmly and gratefully extended to all who have contributed.

### **Trustees and Staff**

A great loss was suffered on June 4 through the death of Major Kermit Roosevelt in Alaska. He had been a member of the Board of Trustees since 1929. He will be greatly missed.

In April Mr. Charles J. McGahey, Comptroller, was called for Government war service and Mr. Sanford Miles was appointed in his place.

At the year's end changes in the Aquarium staff took place as follows: Dr. Charles M. Breder, Jr., Director, resigned to become Chairman of the Department of Fishes at the American Museum of Natural History. The following appointments were made in the realignment of the Aquarium staff: Mr. Christopher Coates, Curator and Aquarist; Dr. Ross F. Nigrelli, Pathologist; Dr. Myron Gordon, Assistant Curator; Dr. Breder was elected Research Associate in Ichthyology.

At the close of the year ten trustees and sixty organization members were enrolled in military service.

### **Post-war Program**

A very large amount of detailed planning has been carried out on the Post-war Development Program of the Zoological Park and on the plans for the new Aquarium. In regard to the former, the developments envisaged in these plans are of the utmost importance because they will mean that the Zoological Park will be brought to a unified whole. In the early part of the year it became apparent that the \$1,500,000 allocated under the Post-war Program would not be adequate. Consequently, upon submission of the overall plan to the Commissioner of Parks, it was arranged through his good offices that an additional allocation of \$668,000 should be made. At the year's end our organization was in the midst of the preparation of the final scheme for the proposed new Aquarium, for which an allocation of \$2,000,000 now exists on the Post-war Program schedules. We wish to express our warm gratitude to the Commissioner of Parks, as well as to the members of his staff, for the help and encouragement which they have extended to our institution in these matters throughout the year.

The task of working out these plans has been a very challenging one. We believe that when completed, they will represent a startling advance in exhibition methods. It is therefore ardently to be hoped that when better days come again, the necessary funds will be available for the speedy realization of these great projects.

## THE ANIMAL DEPARTMENTS

At the risk of being charged with complacency, the Animal Departments must report that all buildings and exhibits are filled, our roll of conspicuous and important species is still intact and the animals are thriving on their war-time diets.

We could wish conditions otherwise, and better, of course. The animal collections are satisfactory only in a comparative sense: they *could* be so much worse, and we had actually expected them to be worse. In the past two years we have dropped less than 25 per cent. below pre-war figures for species and specimens. Inasmuch as animal importations are practically non-existent and other zoological gardens are likewise feeling the pinch of war and have no abundance for sale or exchange, it is remarkable that the natural mortality rate has not cut more deeply into our collection.

War-time problems in the Zoo may be summed up under three headings: food scarcities, loss of Keeper personnel to the Armed Forces, inability to get new or replacement animals.

Food scarcities have been of greater interest to newspaper feature writers, who assumed that the Zoo must be in dire straits when rationing went into effect and shortages occurred, than to the staff. As a matter of fact, while some 260-odd kinds of food customarily are served to the animals, not one of them is rationed. More serious has been the necessity of finding substitutes for items that are preferred but unobtainable. Bananas could be replaced by boiled sweet potatoes, North Sea shrimp by Gulf of Mexico shrimp, Japanese dried "flies" by Mexican water insects. Horsemeat has been used instead of beef for a number of years. We can confidently report that no specimen in our collection has suffered nutritional damage—so far.

The loss of Keeper personnel has been acute. Of the thirty-two Keepers in the Mammal, Bird and Reptile departments, twelve have entered the Armed Forces. Yet, while this is one-third of our trained attendants, so far we have lost no key men and have been fortunate in our duration replacements. Some of the latter will provide experienced post-war Keepers. These changes mean that we have a high proportion of men not fully familiar with their duties and put heavy responsibilities on the Head

Keepers and senior Keepers in charge of sections. It is our great good fortune that in these key positions we have men of marked ability and many years of experience, for on them rests our hope of maintaining our priceless collections.

As for new and replacement animals, with the usual channels of supply closed we can only work doubly hard to maintain the health of our present stock and encourage a natural increase for use in exchange with sister institutions. The result of these efforts will be reported more fully in the sections that follow.

## MAMMALS

Zoos get their animals by five different ways: purchase, exchange, gift, birth or direct capture (expeditions). In a normal year the purchases outrun all other methods, if one disregards statistically the springtime flood of local snakes presented by boys and the year-round trickle of baby alligators and baby turtles. It is a significant measure of the state of the animal market that of the 89 arrivals in the Mammal department, only four were by purchase—a Llama and three Tahr.

Thirty-three were gifts and among them were some really interesting animals brought back as pets by service men, including two Short-headed Flying Phalangers from New Guinea, an Alaskan Red Fox, a Brown Lemur picked up in a North African port and a Margay kitten from Brazil. These have been dubbed our "Mascot Menagerie" and have been given special labels.

Exchanges with other institutions produced nine specimens, principally two handsome White-lipped Peccaries from the Central Park Zoo and a pair of young African Crested Porcupines from the Buffalo Zoological Gardens.

Since we realize that almost everything depends on our making the most of our present collection, it is good to be able to report 43 babies born and successfully reared, of 19 species. These were: 3 Axis Deer, 3 Northern White-tailed Deer, 1 Sika Deer, 1 Formosan Deer, 2 European Red Deer, 1 Fallow Deer, 1 Barasingha Deer, 4 Reeve's Muntjac, 2 Nyala, 1 Bushbuck, 1 Blesbok, 3 Blackbuck, 5 Aoudads, 8 Patagonian Cavies, 1 Euro X Wallaroo hybrid, 1 Euro Kangaroo, 1 Vicugna, 1 Llama, 1 Coyote and 2 Black Leopards.

Unfortunately, Zoo births do not always have happy results, and we were unsuccessful in rearing a Gayal calf and litters of Lions and Bengal Tigers. The Gayal was lost by an infection we were unable to control, and the Lion and Tiger cubs failed to receive proper maternal care.

Losses in the collection, always serious when separately considered, were actually less than normal, as the Veterinarian's report shows. Early in the year, because of the growing cost and increasing scarcity of food materials, it was considered advisable to reduce our herds of hoofed stock to nuclei from which they may be built up in better times. About seventy animals were thus disposed of, mostly to other institutions. No species were lost in the process and we shall eventually benefit through retention of only the finest specimens.

The most serious losses by death were those of two Reticulated Giraffes and of Alice, our aged Indian Elephant. The Giraffes were destroyed because of chronic disabilities. Alice had lived out a long life and succumbed to the inevitable ravages of old age. She came to us in 1908, at an estimated age of fifteen to twenty years, so that at death she was somewhere between fifty and fifty-five years old—a goodly age for captive elephants.

An unusual death by accident marred the autumn season. The five superb male Lions, kept together on Lion Island since 1941, had always agreed well, barring some natural scuffling at feeding time. On September 21, during the usual scuffle, one Lion inflicted a chance bite which fractured another's larynx and resulted in its death. While the remaining animals still roam their island in perfect amity, when weather permits, the risk of repetition of such mischance is avoided by separation at feeding time.

In spite of the scarcity of building materials, many improvements have been made in the Department's installations. The interior of the Primate House was completely renovated, to provide commodious, glass-fronted quarters for our Anthropoids, leaving them completely visible but protected from visitor contact. Glass-enclosed cages for our small monkeys were installed at the Small Mammal House. Other changes in this building included rearrangement of the cage interiors to give a more attractive appearance and at the same time to allow better methods of operation. This has resulted in almost complete elimination of the unpleasant odors that have plagued this building since the day it was opened and also has brought about a noticeable improvement in the appearance and condition of the collection.

The series of corrals extending from the Service Road south to Crotona gate, serving as quarters for our Elk, Camels, Llamas, etc., was reorganized. Several unsightly shelters were removed and corral divisions so arranged as to provide general exhibition space for each species, with a smaller pen in which the often savage males may be segregated.

This report would not be complete without reference to the three exhibits of particular interest: the Gorillas, the Pandas and the Moose. Details of weight increases in the first two species will be found in the Veterinarian's report. It is sufficient to report here that all four animals have averaged satisfactory progress over the year. We had hoped that we could bring about a happy union of the young Gorillas, so that they could share a cage and grow up together. Practice, however, has shown that the vigor and strength of the male make him too much for the female. Their play is still exceedingly rough and since she naturally tires first, she is in definite danger of injury from her exuberant young companion. We plan now to allow the animals to play together occasionally, to separate them as soon as the fun becomes too strenuous and to hope that as they approach maturity, they will become less violent.

The Pandas present an example of the temperamental variance in animals that show no external differences. The hypothetical female of this pair is quiet and sedate, eats her two meals daily without hesitation and gains regularly and amazingly in weight. The male has worried us constantly by frequent refusals to eat, especially in the evening, and by marked weight fluctuations. Recently, he has decided to mend his ways, eats as he should at meal-time and gained nine pounds in a single month.

#### CENSUS OF THE MAMMAL DEPARTMENT

December 31, 1943

Orders		Species	Specimens
Marsupialia	Kangaroos, Opossums, etc. ....	8	19
Primates	Apes, Baboons and Monkeys .....	16	31
Carnivora	Cats, Dogs, Bears, etc. ....	36	77
Pinnipedia	Sealions, Walruses, Seals .....	1	6
Xenarthra	Sloths, Armadillos .....	1	1
Rodentia	Squirrels, Marmots, Beavers, etc. ....	8	27
Proboscidea	Elephants .....	2	3
Artiodactyla	Hippopotamuses, Camels, Deer, Cattle, etc. ....	55	196
Perissodactyla	Rhinoceroses, Horses, Tapirs, etc. ....	8	14
Monotremata	Platypus and Echidna .....	1	1
Total .....		136	375
Summary: Orders, 10; Species, 136; Specimens, 375.			

Our efforts to keep Moose have dated from the early days of the Park and up to the present have never been satisfactory. In the autumn of 1942, a young bull and two cows were received as gifts of the Governments of Nova Scotia and New Brunswick. These animals were installed in a large, woodsy enclosure east of the Primate House and did very well until the first hot weather of spring. Then all three began to refuse food and lost

weight rapidly. On May 31, the male died, but when he was found to have been suffering from a perforated stomach ulcer, our hopes for the others revived. It appeared that this misfortune really was the low spot in our Moose experiences, for gradually the two cows began a recovery that brought them back to good health. They came through the heat of summer without distress and are now in perfect condition. We have reason to hope that they are now fully acclimatized and that we may have solved a problem that has plagued us for many years.

## BIRDS

Annual reports of this Department usually glitter with accounts of bright and dazzling acquisitions. This year there can be no such glowing descriptions. Arrivals have been few, and confined mostly to such small species as are reared in the aviaries of California or to local birds gone astray and brought in to us by their preservers.

In previous years half a page, at a very minimum, would be reserved for a fine-type list of arrivals exhibited in the collection for the first time. By contrast, here is the 1943 list of "Species of Birds New to the Collection":

Chinese Bulbul, *Pycnonotus sinensis sinensis*  
Syrian Bulbul, *Pycnonotus barbatus*

That list is certainly an all-time low for the Bird Department and reflects accurately what has happened to the bird market. Only the Chinese Bulbul was purchased, from a local dealer; the Syrian was the gift of Mr. R. L. Ware.

The most notable gift of the year was that of Mr. William K. Dick, which included 12 Pheasants, 5 Doves and 2 Ducks.

Breeding successes were not numerous but included two rather unusual young birds reared—a White-necked Crane and a Barnacle Goose. There was a curious linkage here, for the Goose laid in the Crane's nest. The gosling hatched first and was successfully reared by hand in the Children's Zoo, while the Crane went on to hatch and rear her own infant.

While arrivals have been few, losses by death were gratifyingly low during the year. The most serious were those of a male South African Ostrich and three of our precious Birds of Paradise—the Empress of Germany's, the female Long-tailed and our old Lesser. One of our handsome Saddle-billed Storks, which had been such a striking feature of the summer group at the African Plains, was killed by accident. This unfortunate happening was not witnessed but it appears to have consisted of the bird's being run over by frisking antelope.

During July and August, our old enemy, botulism, a type of food poisoning caused by a toxin, appeared on most of our water-ways and made some havoc among our waterfowl. With the coming of cool weather, at the end of August, the trouble receded. No remedy beyond fresh water has so far been devised to protect us against this scourge, which seems to be increasing its occurrence in eastern waters.

Several important improvements were made in the Department's installations. The Dome Cage, at the southeastern corner of the Bird House, had a much-needed redesigning and now presents a handsome appearance. The large detached flight cage north of the Pheasant Aviary has been thoroughly overhauled and furnished with rock-work, pools and planting. This work was done through the generosity of Mr. John H. H. Phipps and the exhibit now is known as the Phipps Aviary.

#### CENSUS OF THE BIRD DEPARTMENT

December 31, 1943

Orders		Species	Specimens
Struthioniformes	Ostriches .....	1	1
Rheiformes	Rheas .....	1	3
Casuariiformes	Cassowaries and Emus .....	2	3
Tinamiformes	Tinamous .....	2	2
Sphenisciformes	Penguins .....	2	8
Pelecaniformes	Pelicans, Cormorants, etc. .....	13	22
Ciconiiformes	Herons, Ibises, Storks, Flamingos, etc. .....	29	53
Anseriformes	Swans, Ducks, Geese and Screamers .....	54	402
Falconiformes	Vultures, Hawks and Eagles .....	24	33
Galliformes	Quail, Pheasants, etc. .....	64	139
Gruiformes	Hemipodes, Cranes, Trumpeters, Rails, etc. .....	20	40
Charadriiformes	Plovers, Sandpipers, Gulls, etc. .....	19	42
Columbiformes	Pigeons, Doves and Sand-grouse .....	48	86
Psittaciformes	Parrots, etc. .....	17	27
Cuculiformes	Touracos and Cuckoos .....	7	10
Strigiformes	Owls .....	11	21
Apodiformes	Hummingbirds .....	5	10
Coliiformes	Colies .....	2	8
Trogoniformes	Trogons and Quetzals .....	1	5
Coraciiformes	Kingfishers, Hornbills, etc. .....	11	13
Piciformes	Barbets, Toucans and Woodpeckers .....	14	18
Passeriformes	Perching Birds .....	236	459
	Total .....	583	1,405

Summary: Orders, 22; Species, 583; Specimens, 1,405.

#### REPTILES

Even the professional snake collectors seem to have gone to war, for sources of supply in the South and Southwest dried up during the past year and in the fall we had great difficulty arranging for enough common North American species to carry over during the winter. Even such standard items as Gopher Snakes, one of which is needed each week as food for our King Cobra, were for a time almost unobtainable.

Still, the compartments in the Reptile House are filled and the magnificent King Cobra and Black Cobra, with a few other outstanding specimens from foreign lands, make a good show.

The only important loss of the year was that of "Grandpa," the largest of our Galápagos Tortoises, who had been on exhibition for thirty-four years. For many months it had been noticeable that he was ailing, and Dr. Goss lavished attention and treatments on him, but to no avail. Before his death, arrangements were made with the Buffalo Museum of Science for his final disposition and when the end came he was sent to the Museum's preparatory department. The skill of modern museum taxidermists is well exemplified by the result: mounted and displayed in one of the main halls of the Museum, "Grandpa" is astonishingly lifelike.

Shortly before his death, an understudy that approximates "Grandpa's" 305 pounds was brought up from the Society's Galápagos Tortoise collection at North Miami, Florida.

The outside cages on the east end of the Reptile House where the larger tortoises are allowed to roam during the summer have been rebuilt and now provide simple but adequate quarters for these animals.

Our emergency supply of snake serums was called upon during the year. Serum was rushed by motorcycle police to Brooklyn to the aid of a boy bitten by a small Rattlesnake, and fortunately the lad recovered.

We normally have on hand for emergency purposes the serums for the principal North American and South American snakes, as well as Cobra serums and those useful in combating the bite of the Black Widow Spider.

In general, the reptile collection is in good condition and the total number of specimens is greater than at the close of the preceding year, although the number of species declined slightly.

#### CENSUS OF THE REPTILE DEPARTMENT

December 31, 1943

Orders		Species	Specimens
Caudata	Newts and Salamanders .....	1	2
Salientia	Frogs and Toads .....	3	7
Loricata	Crocodiles and Alligators .....	6	52
Squamata	Snakes .....	38	114
	Lizards .....	4	17
Testudinata	Turtles and Tortoises .....	20	78
	Total .....	72	270

*Summary: Orders, 5; Species, 72; Specimens, 270.*

## HOSPITAL AND LABORATORY

The diner-out who grumbles when a restaurant serves him a minute portion of meat or, on certain days, no meat at all, should feel a kinship with the carnivores in the Zoological Park. There have been times during the past year when one day's normal supply of horsemeat has had to be stretched over three days because of irregular deliveries, and many more occasions when standard items of animal food were not available at all.

The devising of acceptable substitutes is a function of the Veterinarian and, with shortages and delays in delivery chronic throughout the year, a disproportionate amount of his time had to be given to dietary worries. Inasmuch as the food of many animals in a large zoological collection is necessarily a substitute for what would be eaten in the wild, the Veterinarian has been in the position of finding substitutes for substitutes—compromising a compromise, as it were.

It is a fact well known to anyone having to do with animals, be they household pets or Zoo rarities, that they are very like human beings in one respect—they are creatures of habit in their food preferences. This has been strikingly demonstrated by our big carnivores in recent years. For a long time they were fed on beef, but eventually a decision was made to shift to horsemeat. The Lions, Tigers, Jaguars and Leopards refused it at first, accepted it under stress of hunger—and a year later had to be coerced again into taking beef when we shifted temporarily to that kind of meat. Now we are using horsemeat exclusively and there was the usual struggle, at the beginning, to force its acceptance.

With many animals, of course, substitute diets are possible only within very narrow limits. There are, for instance, some 500 known kinds of bamboo in the world, but the Giant Pandas apparently will take only a handful of kinds. It is lucky for us—and the Pandas—that one of their favorites grows under cultivation in Georgia, and is even hardy in the New York area. More than once when shipments of the fresh stalks from Georgia were delayed in transit, the Pandas had to subsist for several days on a mere handful of winter-dried stalks harvested from a small experimental plot at the entrance to our Service Yard.

Despite all the difficulties, however, the health of the collection, insofar as diet is concerned, has been excellent and we are able to report that on no occasion have the animals been given food needed for human beings.

The national aspects of the nutrition of pet animals has been given consideration in Washington and the services of the Veterinarian were

enlisted in the past year by the Food Distribution Administration, later by the War Food Administration and the National Research Council, in working out a program to conserve animal proteins. The result of these efforts will be an adequate supply of food for the meat-producing animals which are so important in the nation's needs for more meat and eggs.

Our Laboratory continues to take part in a study of tuberculosis in captive wild animals, in association with the New York State Veterinary College and the Mayo Foundation. Tissues and materials for research were sent to medical institutions such as the Johns Hopkins Hospital at Baltimore, the New York University School of Medicine, the New York University Dental School, the Department of Anatomy of the New York University School of Medicine, the College of Physicians and Surgeons in New York, the University of Minnesota, the University of Wisconsin and Rutgers University.

Other and more generalized studies are being made in our Laboratory as a result of the appointment of Dr. Goss as chairman of a special committee on the diseases of wild animals by the American Veterinary Medical Association at its meeting in Chicago during the late summer.

Before the end of the year we were able to report that our present psittacine collection is free of psittacosis, as a result of cooperative efforts with the New York City Board of Health and the George Williams Hooper Foundation. In the past two years it has been found that psittacosis and ornithosis viruses are widespread among birds, and by reducing the collection to disease-free specimens and testing all incoming psittacine birds before exhibiting them, we feel we are doing the utmost in protecting the public from possible infection by these viruses.

Despite our strict quarantine regulations and rules prohibiting visitors from bringing pet dogs into the Park, an outbreak of canine distemper caused the loss of all our Cape Hunting Dogs (*Lycan pictus*) and Binturongs (*Arctictis binturong*). The Cape Hunting Dogs were the first we had ever exhibited and we had had the good fortune to rear young from them, as was also the case with the Binturongs. From this experience it appears that vaccination against distemper, despite its dangers and shortcomings, will have to be instituted for all our canines and dog-like species.

As a housekeeping detail, it should be mentioned that the Construction Department has supplied new and easily cleaned food delivery boxes to the Cookroom, for the transportation of food to the animal buildings. They eliminate wastage and spoilage.

The Laboratory was still waiting at the end of the year for delivery

of modern X-ray and fluoroscopic equipment ordered during the fall. This will be a valuable adjunct to the clinical and research work of the Hospital, Aquarium and Tropical Research Departments.

One of our Giant Pandas has caused concern by erratic eating habits, but near the end of the year we made some dietary changes which seemed to stimulate his appetite. Weights are taken every month and the readings in January, 1944, showed 179 pounds for the supposed male and 267 pounds for the female—a gain of only 3 pounds for the former and 78 pounds for the latter since January, 1943.

The young Gorillas, on the other hand, keep closely parallel in their development and their January, 1944, weights were: male, 97.5 pounds; female, 76 pounds. These were gains of 27.5 and 23 pounds, respectively, since the previous January weighing.

Disposition of dead specimens from the whole collection is made to various museums and research institutions on the basis of requests and special interests. The American Museum of Natural History received ten specimens in 1943.

#### MORTALITY TABLES FOR 1943

##### MAMMALS

Year	Total in Collection	Died	Mortality Percentage
1943	562	115	20.4
1942	702	206	29.3
1941	874	215	24.5
1940	744	159	21.3
1939	621	120	19.3
Total	3,503	815	

AVERAGE MORTALITY FOR PAST FIVE YEARS: 23.2

##### BIRDS

Year	Total in Collection	Died	Mortality Percentage
1943	1,803	340	18.8
1942	2,008	321	15.9
1941	2,273	391	17.2
1940	2,082	369	17.7
1939	2,105	415	19.7
Total	10,271	1,836	

AVERAGE MORTALITY FOR PAST FIVE YEARS: 17.8

## THE AQUARIUM

Increasingly in the past twelve months the fact that a new Aquarium will be built after the war has become the core of the Aquarium staff's cosmos. It is not alone that much time and thought are being given to conferences with the architects, but rather that so much study *has been* given to the blueprints already; the large outlines have hardened, the basic pattern of a new approach to water-world exhibition has been agreed upon. The time has come for concentration upon the practical details of new methods of piping, of filters, of tank backgrounds, of labels and lighting and aeration. And for these purposes, the interim Aquarium in the Lion House, residue of the old Battery Park establishment, is ideal. In the very acts of maintaining, experimenting and improving the present Aquarium exhibit, the staff is looking ahead to the problems and peculiar conditions of the post-war Aquarium, experimenting for a double purpose.

We have, for instance, established to our own satisfaction that comparatively lengthy descriptive labels are not a waste of effort *if the exhibit they accompany is interesting in itself and attractively presented*. A Lungfish panel installed in 1942 was the first proof of this, and it has since been confirmed by the success of an Eel panel that by map, extremely long labels, living Eels and preserved leptocephali and elvers tells the extraordinary story of the journey this fish makes from the spawning grounds in the ocean to fresh water and back to the ocean after reaching maturity. Visitors who might be expected to pass "reading matter" with scarcely a glance have been observed reading the long labels, studying the map, taking in all the information so graphically presented.

The very fact that the present Aquarium is small has made it easier to work with models of new apparatus that may revolutionize operations in the post-war Aquarium. We have developed, in working model form, a novel type of water filter which combines a tremendous increase in the amount of water handled per unit of area with a very considerable decrease in cost. Coincidentally we have put into operation a new distribution tank to control the flow and pressure on the fishes in the exhibition tanks, and have evolved an exhibition tank itself which has multiple

advantages—more pleasing to the eye of the visitor, more satisfactory for the fishes, more easily “worked” by the tankman, and which may be used either as a single tank system with its own pump and filter or as a unit in a major system.

So intimately associated are all the functions of an Aquarium that the solution of one problem frequently involves re-examination of the ancillary services. Out of the experiments with the new exhibition tanks came a most satisfactory, simple, air-lift pump.

The past year has seemed a good time, too, to investigate the new materials and improved techniques brought into prominence by war research. For example, a plastic piping called Saran, manufactured by the Dow Chemical Company, shows great promise and in adapting it to our special requirements we have had the close cooperation of the manufacturer's engineers. If, ultimately, Saran proves to be as adaptable as we have reason to expect, the saving in cost and ease of working over hard rubber or glass will be tremendous.

Many of the techniques on which we are currently engaged will be found useful in connection with another post-war project, the Conservation Exhibit planned for installation in the Zoological Park. The exhibit will include a fish hatchery and the Aquarium staff has taken part in the preliminary planning.

## RESEARCH

In its scientific work the Aquarium staff moved forward in its long-term researches, undertook a few new problems, and was called upon for practical help in some matters connected with the war. We are glad to say that two members of the staff were able to make very real contributions to the solution of two major medical problems.

Fundamental research was made on the acetylcholene cycle, in which the cycle was demonstrated for the first time and its relation to action potential was shown. Phases of this enzymic reaction are of war interest.

The staff's knowledge and experience were consulted in connection with the relation between fish diseases and human diseases, in the development of shark repellants and in the perfection of submarine listening devices.

The difficulties of researches involving experimental animals from distant lands are illustrated by our efforts to make importations from Africa and South America. A few shipments of animals pressingly needed by our own and cooperating institutions came through; more were lost at sea than were received, however.

Long-term studies are continuing under the following headings:

### **Genetics**

The only pure strain of *Platypoecilus maculatus* maintained for experimental purposes is housed in the Aquarium's laboratory, and is used for both national and international research stock. The genetic possibilities of the fish are being explored, with especial emphasis on neoplasms and sex determination.

### **Neoplasms**

Studies of the papillomas of Sunfishes, lymphocystis disease of marine and fresh-water fishes, thyroid tumors, lip tumors, epitheliomata and osteomata.

### **Nerve Activity**

The chemistry of nerve and action potential, electro-physics and electro-physiology.

### **Endocrinology**

The activity of oestrogenic and other hormones in fishes and other aquatic vertebrates in relation to human conditions.

### **Parasitology**

The parasites of marine turtles and marine fishes, and other conditions in fishes sometimes producing disease in man.

### **Vitamins**

The relation of certain obscure vitamin products to deficiency diseases in man and animals.

Dr. Breder continued his work on the Mexican cave fish, *Anoptichthys jordani*, and on the life history of the Tarpon. Cataloging of fish diseases and fish parasites went on without interruption.

Dr. Nigrelli has been appointed Consultant on Fish Diseases to the Fish and Wildlife Service, Department of the Interior, and Scientific Consultant to the Bingham Oceanographic Institute of Yale University. Mr. Coates was appointed Research Associate in Pathology to the Jewish Memorial Hospital of New York City. Dr. Gordon was appointed to the National Research Council Committee on Common Problems of Genetics and Paleontology, to the committee on the Maintenance of Pure Genetic Strains, and was made a member of the examining committee of the Columbia University Graduate School.

## COLLABORATORS

Collaborating with the Aquarium staff during the year in various research projects were:

Dr. George M. Smith, Department of Anatomy, Yale University; Dr. David Nachmansohn, Department of Neurology, College of Physicians and Surgeons, Columbia University; Lt. James W. Atz, U. S. Army; Dr. A. L. Machado, Department of Biophysics, School of Medicine, University of Brazil; Dr. R. T. Cox, Department of Physics, Johns Hopkins University; Dr. A. I. Weisman, Jewish Memorial Hospital, New York; Dr. A. L. Sandholzer, Fish and Wildlife Service, U. S. Department of the Interior; Dr. L. W. Maraventano, Bureau of Laboratories, City of Yonkers; Dr. H. W. Stunkard, Department of Biology, New York University; Dr. Harry Charipper, Department of Biology, Washington Square College, New York University; Dr. V. Brown, Department of Physics, College of the City of New York; Lt. H. Cohen, U. S. Army; Dr. M. Levine, Montefiore Hospital, New York; Dr. A. Claude, Rockefeller Institute for Medical Research, New York; Dr. E. B. Gresser, Medical School, New York University; Dr. R. Chambers, Department of Biology, New York University; and Dr. C. L. Hubbs, University of Michigan.

## PUBLICATIONS IN 1943

### Dr. Breder

Aquariums. In *Britannica Book of the year*. (1942): 67-68.

Breder, C. M., Jr. and Krumholz, L. A.

On the locomotor and feeding behavior of certain postlarval Clupeoidea. *Zoologica*, 28 (10): 61-67. 2 plates. 3 text-figs.

Breder, C. M., Jr. and Rasquin, P.

Chemical sensory reactions in the Mexican blind characins. *Zoologica*, 28 (20): 169-200. 3 plates. 9 text-figs.

Cox, R. T. and Breder, C. M., Jr.

Observations on the electric discharge of *Narcine brasiliensis* (Olfers). *Zoologica*, 28 (8): 45-51. 4 text-figs.

The eggs of *Bathygobius soporator* (Cuvier and Valenciennes) with a discussion of other non-spherical teleost eggs. *Bull. Bingham Oceanographic Coll.*, 8 (3): 1-49. 4 plates. 16 text-figs.

Apparent changes in phenotypic ratios of the characins at the type locality of *Anoptichthys jordani* Hubbs and Innes. *Copeia* (1): 26-30. 1 fig.

Problems in the behavior and evolution of a species of blind cave fish. *Trans. N. Y. Acad. Sci.*, Ser. II, 5 (7): 168-176.

A note on erratic viciousness in *Astyanax mexicanus* (Philippi). *Copeia* (2): 82-85. 1 fig.

### Mr. Coates

With D. Nachmansohn, R. T. Cox, and A. L. Machado:

Phosphocreatine as Energy Source of the Action Potential. *Proc. Soc. Exp. Biol. and Med.* (52): 97-99.

Action Potential and Enzyme Activity in the Electric Organ of *Electrophorus electricus*. 11. Phosphocreatine as Energy Source of the Action Potential. *J. Neurophysiol.* (6): 383-396.

With A. I. Weisman:

New Frog Test in Pregnancy Diagnosis. *N. Y. Phys.*, 1943, vol. 19, p. 27.  
 Rabbits for Food or Pregnancy Testing. *Jour. A.M.A.*, 1943, vol. 421, p. 1109.  
 A New Experimental Laboratory Animal—the South African Clawed Frog *Xenopus laevis*. *Bull. N.Y.A.*, Med., 1943, vol. 19, second series, p. 660.  
 Use of South African Clawed Frog *Xenopus laevis* as an Assay Animal for Gonadotropic Hormones. *Jour. Lab. and Clin. Med.*, 1943, vol. 28, p. 1631.  
 Frog Test as a Rapid Diagnostic Test for Pregnancy. Program—Med. Soc. of the State of N. Y., 1943, p. 79.

### Dr. Nigrelli

The biometry of puffers and their parasites. *Zoologica*, 28 (1): with Lt. Atz.  
 The occurrence of leeches, *Ozobranchus branchiatus* (Menzies) on fibroepithelial tumors of marine turtles, *Chelonia mydas*. *Zoologica*, 28 (2): with Dr. G. M. Smith.  
 Causes of disease and death of fishes in captivity. *Zoologica*, 28 (4).

### Dr. Gordon

Genetics, *Nelson's Loose-leaf Encyclopedia* 1943: 347-349a.  
 Organic evolution and genetics, *American Yearbook for 1942*: 760-768.  
 Genetic studies of speciation in the swordtail-platyfish group and of the experimentally produced hybrids. *Trans. N. Y. Acad. Sci. Ser. 2*, 5: 63-71.  
 The evolution of Darwinism (Book Review of Huxley's Evolution), *The New York Times Book Review*, 1943, July 25, p. 23, 1943.  
 Enter the swordtail number 7744 in the baby fish derby, *Aquarium*, 11: 163.  
 Trap for surplus snails, *Aquarium*, 11: 145.  
 A study of mollies in black and white, *Aquarium*, 12: 8-9.  
 What does the "gravid spot" mean? *Aquarium*, 12: 28-29.  
 Black topper platy, *Aquarium*, 12: 71-72.  
 Feeding platyfish and swordtails, *Aquarium*, 86-88.  
 Charales, plant benefactors of fishes, *Aquarium*, 12: 117-120.  
 Mendel and his discovery, *Aquarium*, 11: 192-194.  
 Book reviews of Driver's "Name that Animal," *Aquarium*, 11: 195.  
 Black lace for the gold platyfish, *Animal Kingdom*, 46: 18-20.  
*Gordon, Myron and Fred Flathman*  
 The genetics of melanoma in fishes. VI. Mendelian segregation of melanophore reaction types in embryos of a melanomatous mother, *Zoologica*, 28: 9-12.  
*Gordon, Myron and Winifred Lansing*  
 Cutaneous melanophore eruptions in young fishes during stages preceding melanotic tumor formation. *Journal of Morphology*, 73: 231-245.  
*Gordon, Myron, Herman Cohen, and Ross F. Nigrelli*  
 A hormone-produced taxonomic character in *Platypoecilus maculatus* diagnostic of wild *P. xiphidium*. *American Naturalist*, 77: 569-572.  
*Hubbs, C. L. and Myron Gordon*  
 Studies of cyprinodont fishes. XIX. *Xiphophorus pygmaeus*, New species from Mexico, *Copeia*, 1943 (1): 31-33.

## DEPARTMENT OF TROPICAL RESEARCH

Neither expeditions nor extended field trips were undertaken in 1943 and for twelve months the staff explored and exploited the resources of the Laboratory in the Zoological Park, with results that bulked large in publication and organization of materials from past expeditions. Definite

plans were completed, however, for a South American expedition in the coming year.

Drawing on its long experience in tropical research, and particularly on the accomplishments of the Venezuelan expedition of 1942, the Department on June 10 opened an exhibit of jungle problems and dangers and the work of the Venezuelan expedition in the Heads and Horns Museum. The jungle section remained on view until the end of the year and more than 230,000 visitors passed through the halls.

The department contributed eight articles to *Animal Kingdom* and others to outside publications, all of a popular nature. Dr. Beebe wrote the Introduction to "The Pacific World," the volume for the use of the Armed Services being edited by Mr. Osborn, and also contributed the chapters on "Stars Over Polynesia" and "Galápagos." A book on the Venezuelan expedition has been begun. "Half Mile Down" has been requisitioned for the Armed Services in an edition of 60,000 copies for publication and distribution by the Army and Navy. "Arcturus Adventure" is being translated into Spanish and Portuguese in editions of 25,000 each. "Book of Bays" is being published in Spanish in Buenos Aires. Dr. Beebe and Miss Crane have just finished an "Anthology of Literary Natural History," of some 200,000 words, from Aristotle to the present day, to be published in 1944. It is being submitted as under the auspices of the Zoological Society.

Dr. Beebe gave five and Miss Crane seven lectures on the work of the department, using the colored motion pictures taken in Venezuela.

Near the end of the year reports were received from Bermuda that good care is being taken of New Nonsuch, the house, boathouse, boats, laboratory gear and grounds.

The Bathysphere has entered the Navy, being shipped to Washington on May 12 on loan for the duration. It is being used in testing the strength of depth charges and in various other ways.

## SCIENTIFIC ACTIVITIES

Sixteen full collections have been sent to as many specialists and universities for naming and study, and six papers have already been received as a result. A number of scientists, including Dr. Cochran of the National Museum, visited the Laboratory to study the department's specimens. Curators of the American Museum of Natural History have been most generous of their time in naming difficult specimens from the Guiana and Venezuela expeditions, and large collections of insects and other groups have been presented to the Museum.

### Department Work

Dr. Beebe, working with Mr. Fleming and Miss Crane, spent several weeks in the preparation of the Venezuelan Expedition exhibits. Ecological studies of Venezuela have been published in *Zoologica* and six others are nearing completion. Comparison of the faunas of Guiana and northeastern Venezuela is becoming more significant, and the great number of field notes from both localities are being brought into logical sequence. Seven articles by the staff or as a result of departmental expeditions have appeared in *Zoologica*. A new and interesting direct result of the war is the relatively large number of letters received from soldiers and sailors, telling of the wild life and asking questions about insects, shells, birds and animals. Correspondence of this kind has been undertaken with twenty-seven members of the Armed Forces.

With the concentration of all the scattered collections of the department into the ample new quarters in the Heads and Horns Building, it has been possible to re-examine all the specimens of the last twenty expeditions, keeping some for study and reference and presenting the rest to the American Museum of Natural History. Direct reference is now possible to all the thousands of paintings, photographs and specimens. During the summer, with outside help, all the five thousand-odd vials, bottles and jars containing study collections in the Laboratory were cleaned and refilled.

Miss Crane continued her studies of display and courtship of fiddler crabs, by visits to the beaches of Atlantic City, Greenwich, Pelham Bay, Port Jefferson, Staten Island and southern New Jersey, and the results have been published in *Zoologica*. The value of this investigation lies not only in the concrete discoveries themselves, but also in their indirect application to our knowledge of the evolution of display in other groups of organisms. This is indicated in letters from Mayr (birds), Schmitt (crustaceans), Hubbs (fish), and Pearse (general ecology). Continuing along the same line of psychology in connection with structure, a series of papers on the spiders of Guiana and Venezuela is being prepared.

In September Miss Crane represented the Zoological Society at the annual convention of the Biological Association in Princeton, exhibiting scientific photographs and motion pictures taken on the Venezuelan Expedition.

Mr. Fleming has spread and separated into families more than ten thousand specimens of butterflies and other insects, studying them as time permits. Duplicates are being given to the American and Venezuelan

Museums. New species and unsolved problems characterize our recent neotropical collections.

Mr. Swanson, in the last two months of the year, has completed twenty-five paintings of Venezuelan amphibians, reptiles and mammals for presentation to the Venezuelan government. He has also made a considerable number of microscopic drawings for *Zoologica* articles.

Mrs. Vander Pyl has completed her paper on Pacific lantern fishes and brought the deep-sea fish catalogue up to date.

## Publications

The published contributions of the department numbered 29, of which 15 appeared in *Animal Kingdom* or *Zoologica*.

### CONTRIBUTIONS IN 1943

647—Jungle Close-Ups, with eleven color reproductions of Mr. Swanson's paintings. William Beebe. *New York Times*. January 10, pp. 16-17.

648—Giant Tropical Beetles, with ten enlarged photographs. By Jocelyn Crane. William Beebe. *Life*. January 18, pp. 6-8.

649—How Lost Jungle Fighters can Survive. William Beebe. *Popular Science*. March, pp. 49-53.

650—Member Extraordinary. William Beebe. *Animal Kingdom*. Vol. XLVI, No. 1, p. 23.

651—Pattern and Color in the Cichlid Fish, *Aquidens tetramerus*. William Beebe. *Zoologica*. Vol. XXVIII, No. 3, pp. 13-16.

652—*Uca schmitti*, a New species of Brachyuran Crab from the West Coast of Central America. Jocelyn Crane. *Zoologica*. Vol. XXVIII, No. 6, pp. 31-32.

653—Crabs of the Genus *Uca* from Venezuela. Jocelyn Crane. *Zoologica*, Vol. XXVIII, No. 7, pp. 33-44.

654—Explorer of Ocean Depths. True Life Stories in Pictures. April 1943.

655—A Plea. William Beebe. *Science*. Vol. 97, No. 2515, March 12, p. 243.

656—The Prodigal Jungle. Peter Kihss. *World-Telegram*. April 2, p. 21.

657—La Vida de William Beebe. *Aquí Está*. Argentina.

658—Breeding Gamebirds from a New Continent. William Beebe. *Modern Game Breeding*. April.

659—Expedition Exhibition of the New York Zoological Society. William Beebe. *Science*. Vol. 97, No. 2530, p. 574.

660—Cashing Jungle Dividends, Part I, General. William Beebe. *Animal Kingdom*. Vol. XLVI, No. 2, pp. 27-30.

661—Cashing Jungle Dividends, Part II, Specific. Jocelyn Crane. *Animal Kingdom*. Vol. XLVI, No. 2, pp. 30-34.

662—Urania and White Orchid. Guillermo Zuloaga. *Animal Kingdom*. Vol. XLVI, No. 2, p. 34.

663—Apotheosis of the Zoo. William Beebe. *Animal Kingdom*. Vol. XLVI, No. 3, pp. 50-55.

664—Bathysphere goes to War. William Beebe. *Animal Kingdom*. Vol. XLVI, No. 3, p. 71.

665—Physical Factors in the Ecology of Caripito. William Beebe. *Zoologica*. Vol. XXVIII, No. 9, pp. 53-59.

666—Lightning Bugs. Henry Fleming. *Animal Kingdom*. Vol. XLVI, No. 4, pp. 91-95.

667—Taxonomic Investigations of some Termitophilous Staphylinidae. Charles H. Severs. *Annals Entomological Society of America*, Vol. XXXIV, No. 2, pp. 318-349.

668—Our Zoo's Former Inhabitants. William Beebe. *Animal Kingdom*. Vol. XLVI, No. 5, pp. 111-116.

669—Review of Extinct and Vanishing Animals. William Beebe. *Animal Kingdom*. Vol. XLVI, No. 5, p. 120.

670—Spiders of the Families *Lyssomanidae* and *Salticidae* from British Guiana and Venezuela. Jocelyn Crane. *Zoologica*. Vol. XXVIII, No. 16, pp. 125-138.

671—Mollusks from the West Coast of Mexico and Central America, Part II. L. G. Hertlein and A. M. Strong. *Zoologica*. Vol. XXVIII, No. 19, pp. 149-168.

672—Display, Breeding and Relationships of Fiddler Crabs of the Genus *Uca* of North-eastern United States. Jocelyn Crane. *Zoologica*. Vol. XXVIII, No. 23, pp. 217-223.

673—Artist for Science. *Newark Sunday Call*, Dec. 19.

674—Jungle Nursery. Jocelyn Crane. *Smith College Quarterly*. Spring number.

675—Annual Report of the Director, Department of Tropical Research. William Beebe. *Annual Report of the New York Zoological Society*, 1942, pp. 22-25.

## PUBLICATION AND PHOTOGRAPHY

Production of a reel or two of motion picture film each year has been a casual job of the Department of Publication and Photography for a long time. Results usually were proportionate to the effort expended.

Now we have begun to take our motion pictures seriously, seeing them not only as a means of carrying specific information about animals into the schools, but also as instruments of publicity. We have promised ourselves to make one major picture story a year—not a dazzling goal, perhaps, by Hollywood standards, but while our beckoning star may be hung very low in the sky, at least it has the virtue of being within reach. *One picture a year* we are sure we can make; later we may raise our sights.

Our first attempt was "The Farmer in the Zoo," 1 reel, 16 mm., black-and-white, with incidental sound effects and music and a sound track by a professional commentator. Except for the commentator it was all home-grown—staff written and staff filmed. For a beginning it was not bad, we think. We learned a good deal and will do better on Picture No. 2.

The Photographic section turned out 190 animal negatives in 1943 and we now have 20,831 in our collection. The Print Shop completed 93 jobs other than labels. Labels are "just routine" and we turn them out to order without a second thought.

After reaching a low of only 148 pages in 1942, *Zoologica* climbed to the comparatively dizzy heights of 224 pages in 1943. The volume contained 23 papers, as follows:

### PART 1. MAY 4

1. Biometry of puffers and their parasites. By Ross F. Nigrelli and James W. Atz.
2. The genetics of melanoma in fishes. VI. Mendelian segregation of melanophore reaction types in embryos of a melanomatous mother. By Myron Gordon and Fred Flathman. Text-figures 1-3.

3. Pattern and color in the cichlid fish, *Aequidens tetramerus*. By William Beebe. Plate I.
4. A revision of the genera and species of the family Pycnonotidae (Bulbuls). By Jean Delacour. Plates I and II, Text-figures 1-13.
5. Two new subspecies of *Pycnonotus cafer*. By Jean Delacour. Text-figure 1.
6. Eastern Pacific expeditions of the New York Zoological Society. XXXI. *Uca schmitti*, a new species of brachyuran crab from the west coast of Central America. By Jocelyn Crane. Plate I, Text-figure 1.
7. Crabs of the genus *Uca* from Venezuela. By Jocelyn Crane. Plate I, Text-figure 1.
8. Observations on the electric discharge of *Narcine brasiliensis* (Olfers). By R. T. Cox and C. M. Breder, Jr., Text-figures 1-4.

#### PART 2. SEPTEMBER 15

9. Physical factors in the ecology of Caripito, Venezuela. By William Beebe. Plates I and II, Text-figures 1-5.
10. On the locomotor and feeding behavior of certain postlarval Clupeoidea. By C. M. Breder, Jr. and Louis A. Krumholz. Plates I and II, Text-figures 1-3.
11. A revision of the subfamily Estrildinae of the family Ploceidae. By Jean Delacour. Text-figure 1.
12. The relationship between weight and body form in various species of scombrid fishes. By Sidney Shapiro. Text-figures 1-12.
13. A record of the successful breeding of the quetzal (*Pharomachrus mocinno costaricensis*) in captivity. By Charles Cordier.
14. The occurrence of leeches, *Ozobranchus branchiatus* (Menzies), on fibro-epithelial tumors of marine turtles, *Chelonia mydas* (Linnaeus). By Ross F. Nigrelli and G. M. Smith. Plates I-III.

#### PART 3. DECEMBER 6

15. On the relationship of some common fishes as determined by the precipitin reaction. By Douglas G. Gemeroy. Text-figures 1-7.
16. Spiders of the families Lycosidae and Salticidae (Magoninae) from British Guiana and Venezuela. By Jocelyn Crane. Text-figures 1-4.
17. Notes on the breeding of the Empress of Germany's bird of paradise in captivity. By Prince K. S. Dharmakumarsinhji of Bhavnagar. Plate I.
18. Evidence of healed hungerosteomalacia (late rickets) in a green monkey (*Cercopithecus sabaeus*). By Joseph Pick. Plate I.
19. Eastern Pacific expeditions of the New York Zoological Society. XXXII. Mollusks from the west coast of Mexico and Central America. By Leo George Hertlein and A. M. Strong. Plate I.

#### PART 4. DECEMBER 31

20. Chemical sensory reactions in the Mexican blind characin. By C. M. Breder, Jr. and Priscilla Rasquin. Plates I-III, Text-figures 1-9.
21. The avian genus *Zosterops* in Siam, with description of one new race. By H. G. Deignan.
22. Causes of diseases and death of fishes in captivity. By Ross F. Nigrelli. Plates I-VI.
23. Display, breeding and relationships of fiddler crabs (Brachyura, genus *Uca*) in the northeastern United States. By Jocelyn Crane. Text-figure 1.

Six numbers of *Animal Kingdom* were published and, of course, the *Annual Report* for the year 1942.

A necessary reprinting of the official Guide Book was made in August, after a certain amount of revision to bring its scientific nomenclature up to date. A popular 10-cent booklet, "My Trip to the Zoo," was reprinted for the Facilities Department, and a new booklet of the same price, "Panda Babies Paint Book," was issued.

## EDUCATION

In three major ways the Society's educational work was expanded last year and—something that cannot always be said of innovations—each of the three exceeded our expectations.

A long-discussed public address system was initiated, modestly, with a single loudspeaker at the Sea Lion Pool early in the year, and a four-minute record on Sea Lions was made at a commercial recording studio. It was obvious from the first that the public welcomed the talk, which was given at irregular intervals through the day, and an extension of the lines to other nearby sites was planned. Just at that time we were fortunate enough to find one of the last record-cutting machines still on sale in the city, together with sufficient cable and loudspeakers and miscellaneous equipment to set up an efficient public address system for the group of buildings in the north central part of the Zoological Park. By the end of the year there were outlets in the Gorilla House, Lion House and at the Rhinoceros exhibit area, in addition to the Sea Lion Pool.

By mingling with the crowds listening to the talks and noting the comments, we have learned that they are welcomed and appreciated.

The record apparatus is proving useful, too, in "canning" the voices of the animals and a start has been made on a series of records of typical and familiar Zoo sounds.

A second innovation was the employment of Miss Ruth Dauchy, the summertime superintendent of the Children's Zoo, as a school lecturer during the winter. Accompanied by the Children's Zoo's pet bantam rooster and pet skunk, Miss Dauchy embarked on a heavy schedule of school visits during which she showed Kodachrome slides of the Children's Zoo, talked informally about animal traits and demonstrated the affectionate qualities of her two pets. Within a few days after the availability of her services was announced, we had 230 requests for her—far more than enough to keep her busy until early April when she must return to her duties in the Children's Zoo. We expect that by the end of the winter she will have addressed more than 20,000 school children. The warmth of their reception is already attested by unsolicited letters received after her first talks.

The third new departure of the year was the publication of the first two pamphlets in a "Popular Series" on specific animals. Approximately 2,200 words long, illustrated by two to four photographs, the booklets are intended to answer as many as possible of the questions usually asked

about the animals concerned. The first two booklets were "The Story of Elephants" and "The Story of Camels." At the end of the year four more booklets on North American Bears, Gorillas, Kangaroos, and Giraffes and the Okapi were on the point of going to press.

The booklets are uniformly of eight pages and the first numbers were sold for 5 cents each, a price that puts them within the reach of everyone. The most serious obstacle in the way of their success is that of making them easily available to purchasers. We managed to rent one automatic vending machine which dispensed the Elephant booklet in the Elephant House itself. In November and December, among the worst of the year in point of attendance at the Zoo, 299 copies were sold from this single machine and we are confident that when more machines are available and the series is expanded to cover the major groups of animals, there will be a large and steady sale.

In reorganizing the Education department at the beginning of the year, emphasis was put on methods of working more closely with the public school system of the City. Wartime restrictions on classes visiting the Zoo were removed early in the season and classes began to come in considerable numbers—279 school or other organized groups during the year, with a total of 18,161 pupils. While this is not quite up to pre-war standards, it indicates a strong trend.

Visits by school and organized groups were encouraged by abolishing the admission charge for these parties on the three pay days. Furthermore, since it seemed to us that our own trained personnel could do a better educational job than the group leaders who might not be familiar with the Zoo, we undertook to give free guided tours to classes from New York City schools. In all, 113 school tours were scheduled—far more than we could take care of—and we actually conducted 70 tours, for 2,100 pupils. Forty-three were, fortunately for us, cancelled because of bad weather.

Paying tours were adversely affected by the weather and only nine were given. They did, however, bring in sufficient revenue to meet the expenses of advertising and publicity.

A Spring activity that was only moderately successful was the course in vertebrate zoology sponsored by the Education department and given by Messrs. Coates, Crandall, Goss, Leister and Nigrelli on the fourteen Saturday mornings following February 4. Although it was registered with the Board of Education as a teachers' alertness course, none of the eight registrants worked for credit. Gasoline rationing apparently handicapped this program.

School contacts through films and slides were only average, with 76

schools on our borrowers' list. Slides were shown to 12,471 pupils and films to 45,151, a total of 57,622. Thoroughgoing revision of all our animal films will be attempted in the coming year when a film storage vault will be completed in the Zoological Park and our film library, the accumulation of many years, is brought back from storage in Long Island City.

Of all the Society's films, "High Over the Border" undoubtedly is the most successful, just as, technically, it is the best. It was chosen by the Coordinator of Inter-American Affairs for international distribution and copies were made available in South and Central America as well as in the United States. More than 400 theatres in Canada saw it under the auspices of the National Film Board of Canada in 1942 and last year a somewhat shortened version under the title of "Birds on the Wing" was released to American motion picture houses by Columbia Pictures. So far it has been impossible, because of delays in the printing laboratories, for the Education department to get enough copies to meet the school demand, but more prints are expected soon.

Three articles by Dr. Leister and two by Mr. Marcy were contributed to *Animal Kingdom*, one of the latter's being reprinted in the *Toronto, Canada, Star*. Dr. Leister prepared "Camel Caravan" for *Fauna*, the magazine of the Philadelphia Zoological Society. Both Dr. Leister and Mr. Marcy gave several talks during the year, and during the latter part of the year most of Mr. Marcy's time was given to research in connection with "The Pacific World."

## CONSTRUCTION AND MAINTENANCE

The pessimistic belief prevailing a year ago that the war would have a profound effect on maintenance and construction work in the Zoological Park has not been entirely sustained by actual conditions.

New large exhibits and large-scale renovations were out of the question, for governmental restrictions on new building remain in force and have been scrupulously obeyed. While the manpower situation has been reasonably good, with few separations of employees except to the Armed Services, it has been practically impossible to hire temporary, skilled men for any large project. The materials situation has been most critical; many of our pre-war supplies are exhausted and replacement material has been expensive and of generally inferior quality.

Nevertheless, there was plenty that we *could* do, and the year was characterised by the completion of many moderate-sized jobs rather than of a few large ones. This is illustrated by the fact that in addition to our routine operations, we processed more than 2,800 requisitions (an average of ten each working day). And it can be said that the Park is cleaner and in better mechanical condition than it was a year ago.

The most notable project was completion of the alterations to the Gorilla House, putting all the inmates behind glass. Another large job was the creation of an auditorium in the basement of the Heads and Horns Museum, involving the building of a stage, installation of lighting, building of an entrance stairway and ticket booth at the north end of the building, and the cutting of basement doors. The auditorium has a capacity of about 250 persons and was completed in time for the Emil Liers Otter Show during the summer.

Other outstanding construction jobs were the remodelling of the Dome Cage outside the Main Bird House, the landscaping and repair of the Phipps Aviary, preparing natural habitat cages in the Small Mammal House, the beginning of alterations of cages in the Lion House to give a terrace effect, complete renovation of the Elk-Llama range, and construction of a new gatehouse and turnstiles at the Bronxdale Gate.

Priority was obtained for sufficient asphalt to do imperatively-needed patching, and with the lifting of restrictions we expect to do much more in 1944.

The larger painting jobs included all the outside corrals of both the Antelope and Kangaroo Houses, interior of the Elephant, Small Mammal and Ostrich Houses, all gatehouses and all barns in the Fordham district of the Park. In line with our policy of removing anything that has outlived its usefulness, we demolished the Owl cages northwest of the Aquatic Bird House, outside cages west of the Small Mammal House, the Macaw shelter, and so on. New and colorful directional signs were completed and put up all over the Park, so that the last of the old metal arrows could be taken down.

Much work that is never seen by the public goes on all the time, and in this category were the installation of many supporting beams under the floor of the Aquatic Bird House, all new floor drains in the same building, repairs and fireproofing of the beams in the Commissary, a new boiler in the Antelope House, and many other jobs.

Our trees and landscaping have been somewhat neglected in recent years as energies were directed along other lines. Now, despite the lack of experienced gardeners and tree men, landscaping was rearranged or set

in more than fifty locations and early in the year we will be able to state that there are no dead trees in the Park proper. A great deal of secondary pruning will remain to be done.

By a rearrangement of assignments, the task of cleaning up the grounds after a heavy Sunday or holiday crowd has been facilitated and we have been able to present a consistently neater Park.

To maintain our facilities in first-class condition, we have carried on a heavy routine of painting and repairs, and have built new souvenir stands, cashier's booths, carretinas and minor installations in many locations.

It is a source of considerable satisfaction to note that all this work, with the exception of the Gorilla House alteration and two other minor jobs, has been done by our regular employees. Furthermore, the number of extra per diem employees has been kept down to approximately one-tenth the number formerly carried, at a considerable saving to the Society.

## PARK FACILITIES

Certain entertainment and educational facilities of the Zoological Park can be operated only if they are self-sustaining, and we are happy to report that the public response to them in the past year was extraordinarily good—an indication of how much they contribute to the enjoyment and instruction of our visitors.

The Farm-in-the-Zoo was open from April 1 to November 15, and had approximately 100,000 visitors who paid a small admission fee, in addition to about 40,000 children and Service men admitted free.

The Children's Zoo recorded 161,928 paid admissions, plus a considerable number of visitors admitted on Members' and other courtesy passes.

An innovation was an exhibition of tame otters put on by Emil Liers of Homer, Minnesota, in the new auditorium of the Heads and Horns Building. There were 27,987 visitors in the period from May 2 to September 12.

As usual, the pony ride track and the camel and llama ride track operated throughout the year, on mild days during the winter as well as every suitable day during the summer. Pony rides were given to 135,000 children, and 98,402 were accommodated on the camel and llama track. On the latter we seriously miss little Burma, our riding elephant, who had to be destroyed after an accident the previous year.



An interesting member of our "Mascot Menagerie" is the Short-headed Flying Phalanger of New Guinea, one of a pair brought back as pets by an American sailor.



Clinging snow obliterates the familiar landmarks of civilization and the Zoological Park must seem as strange to the animals out of doors as it does to human beings. Here a Moose and a White-tailed Deer explore their transformed woods.



A rainy spring created a temporary marsh in one of our fields and a pair of Wattled Cranes were inspired to lay, and incubate, their first and only egg. But the marsh dried up before incubation was completed and eventually the egg disappeared.



This martial bird is the magnificent Harpy Eagle, one of the largest and finest of the world's eagles. Still a young bird, this specimen was presented to the Zoological Park by a Marine officer stationed in South America.

# T EXTRAORDINARY ANIMAL--THE COMMON EEL



The Common Eel takes on glamour and inspires amazing public interest when displayed in this manner in the Aquarium in the Lion House. The two long printed labels tell the story of the Eel's migration to the Sargasso Sea, and the return of the young Eels to land—and every word is read by visitors who cluster around the exhibit.



The Aquarium has learned a great deal about the planting of fish tanks for beauty as well as utility, and this is representative of one of the small tanks for tropical fishes—an underwater jungle that looks as if it "grew that way" instead of being carefully planned and planted.



A baby Ocelot captured on the Society's Venezuelan expedition. As a pet, he was 100 per cent perfect. His destiny was the Zoological Park, but he caught cold one rainy night and went to wherever good baby Ocelots go.



The Marbled Tree-frog of Venezuela and Guiana, as he sang one evening to the Zoological Society's artist. His vocal sac was distended like the bagpipe of a Highlander. His expression was comic but his utterances were dolorous.

## SUMMARY OF ATTENDANCE

ZOOLOGICAL PARK		
Month	1943	1942
January .....	65,223	71,914
February .....	114,774	84,425
March .....	105,958	177,962
April .....	194,599	319,824
May .....	326,882	353,977
June .....	168,776	213,518
July .....	244,306	268,215
August .....	271,879	256,025
September .....	248,615	237,760
October .....	182,074	189,378
November .....	135,113	106,621
December .....	44,417	39,433
	<hr/> 2,102,616	<hr/> 2,319,052
Total visitors from November 9, 1899, to December 31, 1943 .....		92,240,929



## TREASURER'S REPORTS

For the Year Ending December 31, 1943

CORNELIUS R. AGNEW, *Treasurer*

630 Fifth Avenue

New York 20, N. Y.

## BALANCE SHEET

December 31, 1943

(Except for income on investments which is accounted for in the year received, this balance sheet is prepared on an accrual basis)

	ASSETS
Cash:	
In Banks .....	\$ 128,659.98
On Hand .....	500.00
	<hr/> \$129,159.98
Accounts Receivable from the City of New York:	
Appropriations for Zoological Park Maintenance for the calendar year 1943 in the amount of \$338,-	338.00
527.54 less amount received of \$301,884.44 .....	36,643.10
Other Accounts Receivable .....	3,502.89
Investments, at Cost, bequest or nominal amounts:	
Bonds (Approximate Market Value \$1,145,691.25) ...	\$1,247,221.49
Preferred and Guaranteed Stocks (Approximate Market Value—\$878,603.75)	830,222.56
Common Stocks (Approximate Market Value—\$1,277,845.75) .....	1,306,088.27
Miscellaneous .....	5,077.86
	<hr/> 3,388,610.18
Prepaid Insurance .....	2,349.99
	<hr/> \$3,560,266.14
	LIABILITIES
Due to Park Facilities .....	\$ 31,362.62
Accounts Payable .....	12,527.55
Reserve for Educational and Other Purposes .....	18,000.00
Fund Reserves:	
General and Other Invested Funds .....	\$3,310,298.68
Permanent Wild Life Protection Fund .....	120,516.39
Special and Custodian Funds .....	67,560.90
	<hr/> 3,498,375.97
	<hr/> \$3,560,266.14

*Note:* Animals and other living specimens, heads and horns, assets pertaining to Park Facilities and other sundry property are not included in this balance sheet.

## GENERAL AND OTHER INVESTED FUND RESERVES

## General Invested Fund Reserves:

General Fund .....	\$ 511,065.77
Anna M. Harkness Fund .....	986,979.26
Rockefeller Fund .....	935,683.81
Sage Fund .....	612,129.47
George F. Baker Fund .....	101,202.09
Jacob H. Schiff Fund .....	98,856.35
Florence Lydig Sturges Fund .....	18,252.55

Total General Invested Fund Reserves .....

\$3,264,169.30

## Other Invested Fund Reserves:

Cadwalader Animal Fund .....	\$18,447.40
Stokes Bird Fund .....	4,640.72
Grant Fund for the Protection of Wild Life .....	23,041.26
Total Other Invested Fund Reserves .....	46,129.38
	<u>\$3,310,298.68</u>

## SPECIAL AND CUSTODIAN FUND RESERVES

William E. Damon Fund .....	\$10,702.16
Animal Account .....	21,342.38
Conservation Account .....	17,103.71
Special Projects Account .....	11,000.00
Improvement and Repair Account .....	3,600.96
Park Improvement Account .....	3,186.69
Anna Fuller Fund .....	625.00
	<u>\$67,560.90</u>

## GENERAL FUND

Balance December 31, 1942 .....	\$471,637.80
Add:	
Contributions:	
Archer M. Huntington .....	\$10,000.00
Estate of Mrs. Grace Rainey Rogers .....	20,000.00
Dulaney Logan .....	9,880.57
Life Memberships .....	1,600.00
Income from Stokes Bird Fund .....	205.24
Miscellaneous .....	15.00
	41,700.81
Transfers:	
Balance transferred from Aquarium Research Account	\$ 19.33
Balance from General Income Account .....	337.14
	356.47
	\$513,695.08
Less:	
Loss on Sale or Redemption of Securities .....	2,629.31
Balance December 31, 1943 .....	\$511,065.77

## DONATIONS RECEIVED FOR OTHER THAN THE GENERAL FUND

Special Projects Account:	
Laurence S. Rockefeller .....	\$10,000.00
Childs Frick .....	4,000.00
J. Watson Webb .....	225.00
Mrs. Martha Mercer .....	100.00
J. H. Phipps .....	100.00
Mrs. Robert Buda .....	75.00
Conservation Account:	
Childs Frick .....	1,000.00
Anna Fuller Fund .....	1,250.00

## GENERAL INCOME ACCOUNT

## Income:

Income from Investments—General Invested Funds .....	\$ 144,530.60
Annual Dues .....	8,817.50
Sale of Publications .....	1,240.74
Junior Memberships .....	99.00
Educational Activities .....	189.57
	<hr/>
	\$ 154,877.41

## Expenses:

Actuarial Fee .....	\$ 247.00
Annual Report .....	577.77
Aquarium Research .....	2,391.02
Art Gallery .....	147.80
Auditors' Fees .....	1,750.00
Auxiliary Pensions .....	5,548.44
Bank's Fee as Custodian .....	1,725.50
Donations .....	400.90
Educational Activities .....	4,883.52
Executive Office .....	12,259.99
Insurance .....	2,977.14
Legal Fees .....	2,109.08
Library .....	426.21
Members' Meetings and Miscellaneous Expenses .....	2,037.90
Park Salaries—Administration .....	5,500.00
Pension Fund—Four per cent on Salaries of Members .....	9,832.98
Photography—Salaries and Supplies .....	3,150.02
Publication Expense .....	16,228.86
Reception Expense .....	206.45
Special Events .....	442.15
Tropical Research .....	10,209.82
	\$ 83,052.55
<hr/>	

Reserve for Educational and Other Purposes .....

14,500.00

Park Maintenance Expenditures for the Year 1943 .....

\$395,515.26

Less—Amount provided by New York City for park  
maintenance expenditures for the calendar year 1943 .....

338,527.54

Park Maintenance Expenditures provided by the  
New York Zoological Society .....

56,987.72

Balance to General Fund .....

337.14

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\$154,877.41

## THE PENSION FUND

Founded by Andrew Carnegie

Balance December 31, 1942:

Investments .....	\$ 575,224.62
Uninvested Balance .....	19,594.42
	<hr/>
	\$ 594,819.04

Receipts:

Dividends on Stock Investments .....	\$ 7,879.98
Interest on Bond Investments .....	12,801.56
Contributions by New York Zoological Society Employees—(Three per cent of Employees' Salaries) .....	8,008.86
Contributions by New York Zoological Society—(Four per cent of Employees' Salaries) .....	10,678.23
	<hr/>
	\$ 39,368.63
	<hr/>
	\$ 634,187.67

Expenditures:

Refunds on Account of Resignations .....	\$ 4,020.91
Pension Disbursements .....	39,044.48
Death Benefit Payments .....	485.82
	<hr/>
	\$ 43,551.21
	<hr/>
Loss on Sale of Investments .....	331.43
	<hr/>
	43,882.64

Balance December 31, 1943:

Investments (Approximate Market Value \$521,574.50)	\$ 574,218.87
Uninvested Balance .....	16,134.30
	<hr/>
	\$ 590,353.17
Less—Account Payable (Net) .....	48.14
	<hr/>
	\$ 590,305.03

BARROW, WADE, GUTHRIE & CO.

ACCOUNTANTS AND AUDITORS

120 Broadway  
New York 5, N. Y.

ACCOUNTANTS' REPORT

THE BOARD OF TRUSTEES, New York Zoological Society,  
New York, N. Y.

We have examined the balance sheet of the New York Zoological Society as at December 31, 1943, which excludes the Facilities, and statements of the transactions of the various funds of the Society and of the Pension Fund for the year then ended, have reviewed the system of internal control and the accounting procedures of the Society and, without making a detailed audit of the transactions, have examined or tested accounting records of the Society and the Pension Fund and other supporting evidence, by methods and to the extent we deemed appropriate. Our examination was made in accordance with generally accepted auditing standards applicable in the circumstances and included all procedures which we considered necessary.

We made a test check of the subscriptions, donations and dues reported as received and of the income from investments and we found such items of income to be properly accounted for. The securities and cash balances as at December 31, 1943, as shown in the accounts of the funds presented herewith, have been checked and found in agreement with a list of securities obtained from the custodians and acknowledgments of bank balances obtained from the depositaries. For a number of representative expenditures selected by us approved vouchers or paid checks were examined.

In our opinion, the accompanying balance sheet and statements of the transactions of the various funds present fairly the financial position of the Society at December 31, 1943, on the basis stated therein, and the changes in the funds of the Society and the Pension Fund for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

BARROW, WADE, GUTHRIE & Co.

New York, N. Y.  
April 1, 1944.

REPORT OF THE AUDITING COMMITTEE OF THE NEW YORK  
ZOOLOGICAL SOCIETY

To the President and Board of Trustees  
of the New York Zoological Society

Dear Sirs:

We have examined the reports of Barrow, Wade, Guthrie & Co. on their examination of the accounts of the New York Zoological Society, the Facilities of the Society and the Pension Fund of the Society for the year ended December 31, 1943, and herewith submit the same to you as a complete and satisfactory audit of said accounts, including the General Endowment Fund, Special Endowment Funds, Income Fund, Pension Fund Account and the Facilities Account. It appears that all expenditures and receipts of the various accounts are fully set forth in these reports, that the cash on hand and in the various depositaries has been confirmed and found correct, and that all securities in which the funds of the Society are invested have been satisfactorily accounted for.

Respectfully submitted,

GEORGE C. CLARK, *Chairman*  
WILLIAM DEFOREST MANICE  
J. WATSON WEBB

May 12, 1944

NEW YORK ZOOLOGICAL SOCIETY  
Organized 1895

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## PRESIDENTS

I. ANDREW H. GREEN .....	1895 to 1897
II. LEVI P. MORTON .....	1897 to 1909
III. HENRY FAIRFIELD OSBORN .....	1909 to 1925
IV. MADISON GRANT .....	1925 to 1937
V. W. REDMOND CROSS .....	1937 to 1940
VI. FAIRFIELD OSBORN .....	1940

## FIRST VICE-PRESIDENTS

I. J. HAMPTON ROBB .....	1895 to 1897
II. HENRY FAIRFIELD OSBORN .....	1897 to 1909
III. SAMUEL THORNE .....	1909 to 1916
IV. MADISON GRANT .....	1916 to 1925
V. FRANK K. STURGIS .....	1925 to 1932
VI. W. REDMOND CROSS .....	1932 to 1937
VII. KERMIT ROOSEVELT .....	1937 to 1939
VIII. ALFRED ELY .....	1939

## SECOND VICE-PRESIDENTS

I. CHARLES E. WHITEHEAD .....	1895 to 1902
II. JOHN L. CADWALADER .....	1902 to 1915
III. MADISON GRANT .....	1915 to 1916
IV. FRANK K. STURGIS .....	1916 to 1925
V. HENRY D. WHITON .....	1925 to 1930
VI. KERMIT ROOSEVELT .....	1930 to 1937
VII. ALFRED ELY .....	1937 to 1939
VIII. LAURANCE S. ROCKEFELLER .....	1939

## TREASURERS

I. L. V. F. RANDOLPH .....	1895 to 1901
II. CHARLES T. BARNEY .....	1901 to 1903
III. PERCY RIVINGTON PYNE .....	1903 to 1922
IV. CORNELIUS R. AGNEW .....	1922

## SECRETARIES

I. MADISON GRANT .....	1895 to 1925
II. WILLIAM WHITE NILES .....	1925 to 1935
III. FAIRFIELD OSBORN .....	1935 to 1940
IV. HAROLD J. O'CONNELL .....	1941

## CHAIRMEN, EXECUTIVE COMMITTEE

I. CHARLES E. WHITEHEAD .....	1895 to 1896
II. HENRY FAIRFIELD OSBORN .....	1896 to 1903
III. CHARLES T. BARNEY .....	1903 to 1907
IV. HENRY FAIRFIELD OSBORN .....	1907 to 1909
V. MADISON GRANT .....	1909 to 1937
VI. W. REDMOND CROSS .....	1937 to 1940
VII. LAURANCE S. ROCKEFELLER .....	1940 to 1943
VIII. FAIRFIELD OSBORN .....	1943

## DIRECTORS

I. WILLIAM T. HORNADAY, <i>Zoological Park</i> .....	1896 to 1926
II. CHARLES H. TOWNSEND, <i>New York Aquarium</i> .....	1902 to 1937
III. W. REID BLAIR, <i>Zoological Park</i> .....	1926 to 1940
IV. ALLYN R. JENNINGS .....	1940 to 1941
V. CHARLES M. BREDER, JR., <i>New York Aquarium</i> .....	1937 to 1943

## BOARD OF TRUSTEES

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*City of New York*      *Ex-officio*      { Hon. FIORELLO H. LaGUARDIA, *The Mayor*  
 Hon. ROBERT MOSES, *Commissioner of Parks*

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*Class of 1945*

CORNELIUS R. AGNEW  
 C. SUYDAM CUTTING  
 ALFRED ELY  
 MARSHALL FIELD  
 CHILDS FRICK

ARCHER M. HUNTINGTON  
 DAVID H. McALPIN  
 JOHN H. H. PHIPPS  
 CLENDENIN J. RYAN  
 HERBERT L. SATTERLEE  
 HARRISON WILLIAMS

*Class of 1946*

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 GEORGE C. CLARK  
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 JAY DOWNER  
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 LAURANCE S. ROCKEFELLER  
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 DE FOREST GRANT  
 EUGENE HOLMAN  
 WARREN KINNEY

HENRY R. LUCE  
 WILLIAM DE FOREST MANICE  
 HAROLD J. O'CONNELL  
 DEAN SAGE, JR.  
 LANDON K. THORNE  
 J. WATSON WEBB

## OFFICERS OF THE SOCIETY

FAIRFIELD OSBORN, *President*

ALFRED ELY, *First Vice-President*

LAURANCE S. ROCKEFELLER, *Second Vice-President*

HAROLD J. O'CONNELL, *Secretary*

CORNELIUS R. AGNEW, *Treasurer*

General Office: 630 Fifth Avenue, New York 20, N. Y.

## EXECUTIVE COMMITTEE

FAIRFIELD OSBORN, *Chairman*

CORNELIUS R. AGNEW	WILLIAM DEFOREST MANICE
ALFRED ELY	DAVID H. McALPIN
MARSHALL FIELD	ROBERT MOSES
DE FOREST GRANT	HAROLD J. O'CONNELL
WARREN KINNEY	LAURANCE S. ROCKEFELLER

## PENSION BOARD

FAIRFIELD OSBORN, *Chairman*

CORNELIUS R. AGNEW	ALFRED ELY
CHRISTOPHER W. COATES	WARREN KINNEY
LEE S. CRANDALL	SANFORD MILES
GEORGE C. CLARK	JOHN TEE-VAN

## COMMITTEES OF THE SOCIETY

*Nominating Committee for Board of Trustees*

E. ROLAND HARRIMAN, *Chairman*  
 WILLIAM M. CHADBOURNE  
 SAMUEL THORNE

*Editorial Committee**FAIRFIELD OSBORN, Chairman*

WILLIAM BEEBE	LEE S. CRANDALL
WILLIAM BRIDGES	JEAN DELACOUR
CHRISTOPHER W. COATES	CLAUDE W. LEISTER
	JOHN TEE-VAN

*Art Committee**DAVID McALPIN, Chairman*

MRS. FAIRFIELD OSBORN	MRS. JULIANA FORCE
	WHEELER WILLIAMS

*Heads and Horns Committee**ALFRED ELY, Chairman*

LAURANCE S. ROCKEFELLER	F. CARRINGTON WEEMS
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*Finance Committee**GEORGE C. CLARK, Chairman*

DE FOREST GRANT	FAIRFIELD OSBORN
	JOHN SCHIFF

*Auditing Committee**GEORGE C. CLARK, Chairman*

C. SUYDAM CUTTING	WILLIAM DEFOREST MANICE
	J. WATSON WEBB

*Conservation Committee**CHILDS FRICK, Chairman*

DEFORST GRANT	WARREN KINNEY
	LAURANCE S. ROCKEFELLER

## GENERAL STAFF

JOHN TEE-VAN, *Executive Secretary*

JEAN DELACOUR, *Technical Adviser*

WILLIAM BRIDGES, *Editor & Curator, Publications*

CLAUDE W. LEISTER, *Curator, Education*

DONALD MARCY, *Associate, Education*

SANFORD MILES, *Comptroller*

MILLWARD W. HEATH, *Superintendent, Construction & Maintenance*

## ZOOLOGICAL PARK

LEE S. CRANDALL, *General Curator & Curator of Birds*

CLAUDE W. LEISTER, *Associate, Mammals*

JOHN TEE-VAN, *Associate, Reptiles*

LEONARD J. GOSS, *Veterinarian*

H. C. RAVEN, *Associate, Anatomy*

GRACE DAVALL, *Assistant to General Curator*

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W. REID BLAIR, *Director Emeritus*

WILLIAM BEEBE, *Honorary Curator, Birds*

## AQUARIUM

CHRISTOPHER W. COATES, *Curator and Aquarist*

ROSS F. NIGRELLI, *Pathologist*

MYRON GORDON, *Assistant Curator and Research Associate in Genetics*

CHARLES M. BREDER, JR., *Research Associate in Ichthyology*

GEORGE M. SMITH, *Research Associate in Pathology*

HOMER W. SMITH, *Research Associate in Physiology*

## DEPARTMENT OF TROPICAL RESEARCH

WILLIAM BEEBE, *Director*

JOCELYN CRANE, *Research Zoologist*

HENRY FLEMING, *Entomologist*

GEORGE SWANSON, *Staff Artist*

### *Associates*

WILLIAM K. GREGORY

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 BOESE, QUINCY WARD  
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 BROWN, VERNON H.  
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 CARROLL, PHILIP A.  
 CARTER, ERNEST T.  
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 CROSS, J. W.  
 CROSS, THOMAS N.  
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 CURIEL, MRS. HELENE, "In Memory"  
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 KRASTIN, MISS ALEXANDRA  
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 KUHN, AUGUST  
 KUHN, JULIUS  
 KUNHARDT, MRS. HENRY R.  
 KURZMAN, CHARLES C.  
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 LOW, ETHELBERT IDE  
 LOWELL, JAMES B.  
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 LUKE, ADAM K.  
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 McEWEN, ALFRED  
 McEWEN, PAUL  
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 McILHENNY, EDWARD A.  
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SHEETS, DR. ELMER A.	TALBOTT, H. E.
SHEFFIELD, MRS. JAMES R.	TARRANT, JOHN E.
SHIFFMAN, HARRY, M.D.	TAYLOR, JAMES B.
SIBLEY, C. L.	TAYLOR, MRS. ROBERT COLEMAN
SIEDENBURG, MRS. REINHARD	TENNEY, DANIEL G.
SIEMERS, MISS HENRIETTA L.	TERRY, RODERICK, JR.
SILLECK, HENRY G., JR.	TERRY, MRS. WILLIAM C.
SIMPSON, JOHN L.	THATCHER, MRS. T. D.
SKEEL, MRS. ROSWELL, JR.	THAW, J. C.
SKELDON, FRANK L.	THOMAS, HARVEY M.
SLADE, FRANCIS LOUIS	THOMAS, MRS. HOWARD L.
SLESINGER, DONALD	THOMPSON, MRS. HOLLAND
SLOAN, MRS. SAMUEL	THOMPSON, MRS. LEWIS S.
SLOANE, MRS. JOHN	THURSBY, MRS. SIDNEY
SMILLIE, RALPH	TIEDEMANN, HENRY F.
SMITH, DANIEL CRANFORD	TIMME, WALTER, M.D.
SMITH, FRANK W.	TIMOLAT, JAMES G.
SMITH, HAROLD DEWITT	TINQUE, WILLIAM J.
SMYTH, DAVID W.	TISON, PVT. ALEXANDER, JR.
SNARE, FREDERICK	TITUS, ROBERT R.
*SONDHEIM, PHINEAS	TITUS, MRS. ROBERT R.
SPALDING, ALBERT	TREAT, WILLIAM M., W.O. (jg)
SPALDING, KEITH	TRUMBULL, WALTER
SPARROW, MRS. EDWARD W.	TUCKER, MRS. AGNES
SPEDDEN, FREDERIC O.	TUCKER, CARL
SPITZNER, GEORGE W.	TUCKER, MRS. CARL
SPRINGS, RICHARD A.	TUCKERMAN, MRS. ARTHUR
STAGG, FREDERICK L.	TURK, M. M.
STAINTON, MRS. ESTELLE	TURNBULL, MRS. RAMSAY
STANLEY, ALFRED	TURNER, JOHN B.
STANLEY, HAROLD	TYLER, MRS. VICTOR MORRIS
STANWICK, CHARLES A.	UZIELLI, MRS. GIORGIO
STARR, HOWARD W.	VALENTINE, MISS MARGUERITE E.
STEIN, MRS. ALEXIS W.	VAN ANDA, CARR V.
STEIN, DR. ARTHUR	*VAN CORTLAND, AUGUSTUS
STERLING, MRS. ROBERT D.	VANDERBILT, WILLIAM H.
STERN, ALBERT	VANDERLIPP, W. T.
STEVENS, MRS. MARY	VANDERPYL, CORNELIUS
STEWART, ALEXANDER M.	VANDERPYL, MRS. MARY
STEWART, MISS G. MARIETA	VAN GERBIG, BAREND
STIER, MRS. GEORGE J.	VAN INGEN, DR. PHILIP
STILLMAN, JAMES A.	VAN KIRK, MISS FLORENCE M. P.
STOUT, ANDREW V.	VAN VALEY, DR. EDWIN G.
SRAUB, ANTHONY F.	VAN WEZEL, MRS. LOUISA
SRAUS, MRS. NATHAN	VISHNIAC, ROMAN
STRINGFELLOW, MISS ETHEL GREY	WALKER, MISS MIRIAM DWIGHT

\* Deceased

WALLIS, DR. ROBERT  
 WALTER, MISS E. VIOLET  
 WALTER, WILLIAM I.  
 WALZ, FREDERICK  
 WARBURG, GERALD F.  
 WARD, ARTEMAS, JR.  
 WARD, DR. WILBUR  
 WARD, WILLIAM F.  
 WARDWELL, ALLEN  
 WARNER, FREDERICK H.  
 WARNSHUIS, MRS. A. L.  
 WATERBURY, MISS FLORENCE  
 WEBB, VANDERBILT  
 WEBB, MRS. VANDERBILT  
 WEBER, MRS. ORLANDO F.  
 WEEMS, F. C.  
 WELCH, HENRY K. W.  
 WELLDON, SAMUEL A.  
 WELLS, FAY GILLIS  
 WELLS, LINTON  
 WETMORE, MISS EDITH  
 WHITE, HAROLD T.  
 WHITEHOUSE, SHELDON  
 WHITEHOUSE, WILLIAM F.  
 WHITIN, MISS LOUISE  
 WHITLOCK, BACHE McM.  
 WHITMAN, WILLIAM, JR.  
 WHITNEY, MRS. HOWARD F.  
 ZINSSER, WILLIAM H.

## HONORARY MEMBERS

DR. FRANK M. CHAPMAN  
 MADAM CHIANG KAI-SHEK  
 MADAM H. H. KUNG

CAPT. JEAN DELACOUR  
 DR. C. HART MERRIAM  
 DR. P. CHALMERS MITCHELL

## FELLOWS †

AMORY, COPLEY  
 ANABLE, GLORIA HOLLISTER  
 ANDREWS, DR. ROY CHAPMAN  
 ANTHONY, DR. H. E.  
 BARBOUR, DR. THOMAS  
 BEEBE, DR. WILLIAM  
 BLAIR, DR. W. REID  
 BREDER, DR. C. M., JR.  
 CHAPIN, DR. JAMES P.  
 CHARIPPER, PROF. H. A.  
 CLARK, JAMES L.  
 COATES, CHRISTOPHER W.  
 COX, DR. RICHARD T.  
 CRAMPTON, PROF. HENRY E.  
 CRANDALL, LEE S.  
 CRANE, MISS JOCELYN  
 DAVENPORT, DR. CHARLES B.  
 ELTON, CHARLES  
 FISHER, DR. CLYDE  
 GORDON, DR. MYRON  
 GREEN, DR. ROBERT G.

GREGORY, DR. WILLIAM K.  
 GRESSER, EDWARD B., M.D.  
 GUDGER, PROF. E. W.  
 HARTLEY, G. INNESS  
 HATT, DR. ROBERT TORRENS  
 LANG, HERBERT  
 LEE, PROF. FREDERIC S.  
 LEISTER, DR. CLAUDE W.  
 LLOYD, HOYES  
 MCCLURE, GERVASE W.  
 MCGREGOR, PROF. J. H.  
 MANN, DR. WM. M.  
 MINER, DR. ROY W.  
 MORGAN, PROF. THOMAS H.  
 MURPHY, DR. ROBERT CUSHMAN  
 NICHOLS, DR. J. T.  
 NIGRELLI, DR. ROSS F.  
 OSBURN, DR. RAYMOND C.  
 PARR, PROF. ALBERT EIDE  
 PONDER, DR. ERIC  
 PORTIELJE, A. F. J.

† The qualifications for this class rest solely upon scientific achievement.

PRIEMEL, DR. KURT  
 RAVEN, H. C.  
 SCOTT, DR. GEORGE G.  
 SETH-SMITH, DAVID  
 SETON, ERNEST THOMPSON  
 SMITH, DR. GEORGE M.

SMITH, DR. HOMER W.  
 STUNKARD, PROF. HORACE W.  
 TEE-VAN, JOHN  
 THAYER, GERALD B.  
 TOWNSEND, DR. CHARLES H.  
 YERKES, DR. ROBERT M.

## RESEARCH ASSOCIATE

SMITH, DR. GEORGE M.

SMITH, DR. HOMER W.

## CORRESPONDING MEMBERS

CHARLES BARRETT  
 MAJOR FREDERICK R. BURNHAM  
 T. H. GILLESPIE  
 DR. DAVID CROCKETT GRAHAM

DR. W. REGINALD WHEELER

DR. A. K. HAAGNER  
 WL. JANTA-POLCZYNISKI  
 C. G. STURTEVANT  
 G. TYRWHITT-DRAKE

## SUMMARY OF MEMBERSHIP

Benefactors .....	4
Founders in Perpetuity .....	12
Founders .....	5
Associate Founders .....	9
Patrons .....	33
Life Members .....	313
Annual Members .....	868
Honorary Members .....	6
Fellows .....	54
Research Associates .....	2
Corresponding Members .....	9
 (Total) .....	 1,315

Corrected to January 1, 1944

## THE NEW YORK ZOOLOGICAL SOCIETY

**I**NCORPORATION of the New York Zoological Society by the State of New York was accomplished under Chapter 435 of the Laws of 1895 and the basic purposes of the Society were embodied in Section 2:

Said corporation shall have power to establish, maintain and control zoological parks, gardens, or other collections for the promotion of zoology and kindred subjects, and for the instruction and recreation of the people. Said corporation may collect, hold, and expend funds for zoological research and publication, for the protection of wild animal life, and for kindred purposes, and may promote, form, and co-operate with other associations with similar purposes, and may purchase, sell, or exchange animals, plants, and specimens appropriate to the objects for which it was created.

Subsequently, at a special meeting of the Commissioners of the Sinking Fund, City of New York, held on March 24, 1897, a resolution was passed allotting South Bronx Park for the use of the New York Zoological Society and establishing the terms of a management agreement under which the Society has operated since that date, with only minor modifications.

The resolution of March 24, 1897, and the supplemental agreement of January 24, 1942, provided that the Society should furnish the original equipment of buildings and animals, that it should raise \$250,000 by subscription within three years of the date of starting work on the improvement of the grounds, that the Society should have the right to establish an endowment fund to be used solely for the general uses and purposes of the Society unless otherwise specified by the donors, that the City of New York should provide funds for the maintenance and care of the Zoological Park and for the maintenance of the animal collections, that the Zoological Park should be open to the public free at least four days a week, that the Society may expend the net proceeds of facilities only for the purchase of animals and the improvement of the Zoological Park and that the Society should have the right to make and control all appointments of employees and to fix salaries and make promotions.

BY-LAWS  
OF THE  
NEW YORK ZOOLOGICAL SOCIETY

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ARTICLE I

MEMBERS

SECTION 1. The present members and such others as hereafter shall become members in accordance with these by-laws shall be the members of this Society.

SEC. 2. Annual members shall be elected by the Board or Executive Committee and, upon election, shall qualify for such membership by payment of dues for the first year. Any person who shall fail to qualify within three months after notice of his election shall be deemed to have declined his election.

SEC. 3. Annual dues shall be \$10 payable in advance on the first day of January in each year. The first year's dues of a newly elected member shall be pro-rated from the quarterly date nearest the date of his election.

SEC. 4. Junior members shall be elected by the Board or the Executive Committee and shall qualify for such memberships by payment of dues for the first year. Any person who shall fail to qualify within three months after notice of election shall be deemed to have declined his election.

SEC. 5. Annual dues of Junior Members shall be \$3 payable in advance on the first day of January in each year. The first year's dues of a newly elected Junior Member shall be pro-rated from the semi-annual date nearest the date of his election.

SEC. 6. Any member who shall fail to pay his annual dues within three months after notice that they have become due and demand therefor, shall cease to be a member of the Society. He may, however, be reinstated by the Board or Executive Committee for good cause shown.

SEC. 7. Any person who shall have donated to the Society, in the aggregate, cash or the equivalent in value of any of the following amounts shall be eligible for election, by the Board or Executive Committee, to the class of membership appearing opposite such amount:

\$ 200.00	Life Membership	\$ 5,000.00	Founder
\$1,000.00	Patron	\$10,000.00	Founder in Perpetuity
\$2,500.00	Associate Founder	\$25,000.00	Benefactor

An annual member who has paid dues for five consecutive years may thereafter, at any time, upon payment of the difference between the aggregate dues already paid and \$200, but in no case less than \$100, be elected a Life Member. Upon the death of a trustee, his widow shall be eligible for election, by the Board or Executive Committee, to Life Membership.

SEC. 8. The Board or Executive Committee may elect to membership in the following classes persons who, in their judgment, have achieved the qualifications hereinafter specified:

*Fellows*—Persons of marked scientific achievement.

*Honorary Members*—Persons who have rendered distinguished services in the science of zoology or natural history.

*Corresponding Members*—Persons who have rendered marked services to the Society through correspondence.

SEC. 9. All but annual members shall be exempt from payment of annual dues.

SEC. 10. Benefactors and Founders in Perpetuity shall have the power to designate their respective successors, who shall thereupon be entitled to all the rights and privileges of their predecessors, including the right in turn to designate their successors. Such designation shall be in writing indorsed or attached to the certificate of membership or by last will and testament.

## ARTICLE II

### PRIVILEGES OF MEMBERS

SEC. 1. Each annual member shall be entitled to a member's ticket, ten tickets of admission to the Zoological Park and Aquarium on pay days, a copy of the annual report, a copy of the official periodical publication of the Society, and shall be entitled also to the privileges of the Library and Administration Building at the Zoological Park.

SEC. 2. Each Junior Member shall be entitled to a copy of the official publication of the Society, a Junior Membership ticket entitling him to certain privileges in the Park and Aquarium, and shall be entitled also to the privileges of the Library in the Administration Building at the Zoological Park.

SEC. 3. Life Members shall be entitled to all the privileges of annual members and also to ten additional tickets of admission to the Zoological Park and Aquarium on pay days.

SEC. 4. Benefactors, Founders in Perpetuity, Founders, Associate Founders and Patrons shall be entitled to all the privileges of Life Members and also to receive the Society's scientific publication "Zoologica."

SEC. 5. A member's ticket, issued annually, shall admit the member and his immediate family to the Zoological Park and Aquarium on pay days and to lectures and special exhibitions. It may be used by the member's immediate family.

SEC. 6. Each member, other than a member elected pursuant to Article I, Section 6, shall be entitled to one vote at each meeting of the Society.

SEC. 7. Any member who shall fail to comply with the provisions of these by-laws may be suspended from the privileges of membership or dropped from the rolls of the Society, by a majority vote of those present at a duly constituted meeting of the Board or Executive Committee.

## ARTICLE III

### MEETINGS OF THE SOCIETY

SEC. 1. The Annual Meeting of the Society shall be held on the second Tuesday in January in each year, or on such day thereafter and at such time and place as may be designated by the Board or Executive Committee.

SEC. 2. Special Meetings of the Society may be called upon order of the President or Chairman of the Executive Committee or on the written request of ten Trustees delivered to the Secretary.

SEC. 3. Notice of each annual or special meeting of the Society, stating the time, place and purpose thereof, shall be mailed, at least ten days before an annual and three days before a special meeting, to each member at his address last recorded with the Secretary.

SEC. 4. At all meetings of the Society twenty members shall constitute a quorum.

## ARTICLE IV

### BOARD OF TRUSTEES

SEC. 1. The property, affairs and business of the Society shall be managed and controlled by a Board of Trustees consisting of thirty-six members divided into three equal classes, together with the Mayor and the Commissioner of Parks of the City of New York who shall be members *ex officio* of the Board. Each class of elected trustees shall hold office for three years and until its successors are elected. The term of office of one class shall expire each year and its successor shall be elected at the annual meeting of the Society.

SEC. 2. No person shall be eligible for election to the Board unless he shall be either a Benefactor, Founder in Perpetuity, Founder, Associate Founder, Patron or Life Member and, excepting to fill vacancies, unless his name shall have been posted as a candidate by the Nominating Committee or by not less than ten members in writing in a conspicuous place in the office of the Society not less than ten days before the annual meeting.

SEC. 3. Vacancies in the Board may be filled for the unexpired term by the Board or Executive Committee at any regular or special meeting, by ballot, by a majority vote of the members present; but no person shall be eligible for election to fill a vacancy unless he shall have been nominated at a prior or special meeting of the Board or Executive Committee.

SEC. 4. The Board shall hold an annual meeting in December in each year, on a date and at a time and place designated by the Board or Executive Committee. Other meetings of the Board may be called upon order of the President or Chairman of the Executive Committee or at the written request of five Trustees delivered to the Secretary. Twelve Trustees shall constitute a quorum.

SEC. 5. Notice of each meeting of the Board shall be mailed to each Trustee at least seven days before the annual meeting and at least three days before any other meeting.

SEC. 6. A Trustee who shall fail to attend three consecutive meetings of the Board, without being excused by the Board, shall be deemed to have resigned as a Trustee.

SEC. 7. The Board at its annual meeting in each year shall appoint four standing committees—an Executive Committee, a Finance Committee, an Auditing Committee and a Conservation Committee—each of which shall serve for one year, or until its successors are appointed. The Board or Executive Committee may appoint such other Committees and delegate to them such powers as they may deem advisable or necessary. The President shall designate the Chairman of each committee.

## ARTICLE V

### OFFICERS

SEC. 1. The Board of Trustees at its Annual Meeting in each year shall elect a President, a First Vice President, a Second Vice President, a Treasurer and a Secretary from among the Trustees. The said officers shall hold office respectively for the ensuing year and until their successors are elected. Any vacancy for an unexpired term may be filled by the Board or Executive Committee.

SEC. 2. The President shall preside at all meetings of the Society and of the Board, exercise general supervision of the affairs of the Society, from time to time call attention of the Board to such subjects as in his opinion require consideration and shall exercise the usual functions pertaining to his office. He shall be a member *ex officio* of all standing committees.

SEC. 3. The Vice Presidents, in order of seniority, in case of death, absence, resignation or disability of the President shall perform his duties and exercise his powers.

SEC. 4. The Treasurer shall collect, receive and have custody of the funds and securities of the Society subject to the order of the Board or Executive Committee and shall keep all funds of the Society on deposit with a bank or trust company approved by the Board or Executive Committee. He shall pay all bills and appropriations as ordered by the Board or Executive Committee, shall keep regular and correct accounts and shall submit reports to the Society at its Annual Meeting, to the Board at all Regular Meetings and to the Executive Committee at each meeting. He shall be a member *ex officio* of the Executive Committee. The books of account of the Society shall be open at all times to the inspection of the Trustees and the Executive, Finance and Auditing Committees. The fiscal year of the Society shall be the calendar year.

SEC. 5. The Secretary, unless otherwise ordered by the Board or Executive Committee, shall cause notices to be issued of all meetings of the Society, the Board and the Executive Committee, attend all such meetings and keep the minutes thereof. Together with the President or a Vice President he shall execute all contracts and instruments on behalf of the Society, and shall affix the seal of the Society when authorized to do so by the Board or Executive Committee. He shall conduct the correspondence of the Society, have custody of the seal, archives and books, other than books of account, and perform the usual duties pertaining to his office and such other duties as the Board or Executive Committee may direct. He shall be a member *ex officio* of the Executive Committee.

SEC. 6. The Board or Executive Committee may appoint an Assistant Treasurer or an Assistant Secretary and such other officers or officials as may be deemed necessary to serve at the pleasure of the Board or Executive Committee, and may define their respective duties. A bank or trust company organized under the laws of New York and having its principal place of business in New York City may be appointed Assistant Treasurer and may be made depositary of the funds and custodian of the securities and investments of the Society upon such terms and with such powers as may be delegated to it by the Board or Executive Committee.

## ARTICLE VI

### COMMITTEES

SEC. 1. *Executive Committee*—This Committee shall consist of eight Trustees, together with the President, Treasurer and Secretary as members *ex officio*. Vacancies shall be filled by the Board or by the Committee itself.

In the interim between meetings of the Board, the Executive Committee shall manage and control the property, business and affairs of the Society and exercise all the powers of the Board to the extent not delegated to other Committees or contrary to law. It shall report at each regular meeting of the Board.

Regular meetings of the Executive Committee shall be held on the third Tuesday in each month, unless otherwise ordered by the Chairman, at such time and place as shall be fixed by the Chairman. Special meetings may be called upon order of the Chairman or at the written request of three members of the Committee delivered to the Secretary. Four members including the Chairman shall constitute a quorum.

The Executive Committee shall appoint each year a Nominating Committee which shall hold office for one year and until its successors are appointed.

The Executive Committee shall have power to fix the salaries of the officers and employees of the Society.

SEC. 2. *Finance Committee*—This Committee shall consist of not less than three Trustees and the Treasurer as member *ex officio*. Vacancies therein shall be filled by the Board or Executive Committee.

The Finance Committee shall have power to sell securities and other investments belonging to the Society and to reinvest proceeds of sale and invest any other funds of the Society available for investment, in such securities or investments as it may deem wise. It shall report quarterly to the Executive Committee all purchases and sales of securities and investments made by it. It may submit to the Board or Executive Committee its recommendations with regard to sales or purchases of securities or other investments.

Notwithstanding the power hereby conferred, the Board or Executive Committee may, at any time, direct the sale of any securities and investments held by the Society, or direct the reinvestment of any proceeds of sale or investment of other funds of the Society available for investment in such securities or investments as it may specify.

All transfers and assignments of the securities registered or standing in the name of the Society shall be executed under the seal of the Society by the President or a Vice President, together with the Secretary or Treasurer.

The report of the Chairman of the Finance Committee shall be sufficient authority to the Chairman of the Executive Committee for approving drafts for purchases of securities or investments.

SEC. 3. *Auditing Committee*—This Committee shall consist of three members, other than members elected pursuant to Article I, Section 6, together with the President and the Secretary as members *ex officio*. Vacancies therein shall be filled by the Board or Executive Committee.

The Auditing Committee shall cause the accounts of the Treasurer and any other accounts of the Society to be audited and certified annually, or as often as it deems advisable, by a certified public accountant of its selection, and shall report to the Board at its annual meeting. It shall cause the annual statement of the Treasurer to be audited and certified by such certified public accountant before it is submitted to the Board, and shall annually, or as often as it deems advisable, examine and verify the securities and other investments belonging to the Society.

SEC. 4. *Conservation Committee*—This Committee shall consist of three or more Trustees, together with the President as member *ex officio*. It shall have charge of the wild life conservation activities of the Society and the disbursement of such funds as shall be appropriated to its use by the Board or Executive Committee. Vacancies therein shall be filled by the Board or Executive Committee.

SEC. 5. *Nominating Committee*—This Committee shall be composed of three members other than Trustees and members elected pursuant to Article I, Section 6. Vacancies therein shall be filled by the Executive Committee. This Committee shall select twelve candidates, to succeed the outgoing class of Trustees, to be voted upon at the ensuing annual meeting. Such candidates shall be selected from among the Benefactors, Founders in Perpetuity, Founders, Associate Founders, Patrons and Life Members of the Society. The names of such candidates shall be posted in a conspicuous place in the office of the Society at least ten days before the annual meeting.

## ARTICLE VII

### AMENDMENTS

SEC. 1. These By-Laws may be amended, either by change or repeal of any provision or the adoption of new provisions, at any meeting of the Board by majority vote of the Trustees present, provided such proposed amendment is set forth in full in the notice of such meeting.







